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MEDICAL CLINICS

OF THE

HOSPITAL NECKER;

OR,

RESEARCHES AND OBSERVATIONS ON THE NATURE, TREATMENT, AND PHYSICAL CAUSES OF DISEASES.

BY I. BRICHETEAU,

PHYSICIAN TO THE HOSPITAL, ETC. ETC. ETC.

"Multum egerunt qui ante nos fuerunt, sed non peregerunt, multum adhuc restat operæ, multumque restabit; neque ulli nato post mille secula præcidetur occasio aliquid adhuc adjiciendi."—SENECA.

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ADVERTISEMENT.

In the following translation, one or two of the memoirs of Bricheteau—the "Eloge on Pinel," the preliminary "Considerations on the Art of Observing," and the remarks on "Risus Sardonicus"—have been omitted, partly because they were not possessed of much interest, and partly because portions of certain of them had already appeared; on both which accounts they ought not, perhaps, to have been admitted by the author.

M. Bricheteau has enjoyed extensive opportunities for witnessing disease; and although his mind does not appear to be one of the most logical or precise, his observations furnish materials for thought, and are illustrative of the therapeutics adopted by the majority, perhaps, of French practitioners in the diseases referred to.

Robley Dunglison.

Philadelphia, August 1, 1837.

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PREFACE.

For upwards of thirty years, those physicians who have been placed at the head of scientific movements, have collected facts with so much ardour, and with such a spirit of exclusion and enthusiasm, that theory has generally found extremely little space in their writings. They may, consequently, with some foundation be accused—if not of having raised a levy of bucklers against reasoning, as a distinguished physician of our own time has ingeniously remarked—of having at least attached an undue importance to facts, to the prejudice of induction. Under such circumstances, and when a reaction is beginning to take place against a defective method, which consists in multiplying facts with too little discernment, can we expect to see fresh cases well collected? Has not an author to apprehend that he may be maliciously accused of again forming mere journals of cases: of relating trifling histories in the manner of Forestus, Henricus Abhers, Salmuth, and others; or of tracing aphoristic sketches after the manner of the analyst Pinel? The accusation may at first seem specious; but before assigning any weight to it, may it not be asked whether, at the present day, notwithstanding the superabundance of facts, we can continue to follow the road offered to science and letters by Descartes, without collecting fresh ones; and if, without their assistance, we can profit from the ever requisite advantages of philosophic doubt, and from those of the experimental method? Unquestionably not. Go on collecting, we would say to the detractors of observation, but with discernment, and ultimately the superior man will be found, of whom you yourselves speak—the man who will know how to seize hold of the relations and the systematic bonds which must enchain all facts together.

Hence, although medical literature may be surcharged with facts that are not always useful, it would be erroneous to conclude from this that we could give up the collection of fresh facts without inconvenience; for these may be destined to furnish some links to the chain which must one day unite together all medical knowledge; or to add some *millimètres* to the encyclopediac pyramid of Bacon. Let it be well understood, however, that it is not isolated facts, and still less facts confirmative of demonstrated truths, that we should set about collecting, but cases susceptible of presenting new bases for science, fresh materials for induction.

We may add, that if we attempt to compute the medical cases published, we shall find that their number is prodigious; but, on examining them closely, we are not long in observing that all are not exact and conclusive; hence the necessity of following the advice of Morgagni, who affirms, that it is not enough to count them, they must also be weighed: *non enumerandæ sed perpendendæ sunt observationes.* On the present occasion we may remark, that many publications of this nature which daily appear, although collected in hospitals and at the bedside, do not fulfil the desired conditions. It too often happens that they are the productions of by no means attentive students, or of young physicians still novices in the career of observation, who hasten to publish before time and experience have given their sanction to the premature conclusions they have deduced.

Select and well observed facts appear to us so valuable, that we esteem it a duty in the physician, who wishes to aid in the improvement of science, to collect those that seem to him of a nature to enlighten the yet obscure points of his art; and should he be successful in raising, by this means, but a corner of the veil that still covers the depths of medical science, he will have merited well of humanity. This duty we have endeavoured to fulfil as well as our feeble means would permit, by publishing that which we believed useful in our own observation; but it must not be inferred from what we have just said of the importance of facts, that we shall neglect theory: on the contrary, it will find considerable space in this work; but it shall always be an immediate deduction from observed cases.

The present volume is a first fasciculus, which shall be followed by others as soon as the number of materials seems sufficient; and, without entering into an engagement with the public for any fixed time—an engagement which the very nature of the work would forbid—we may offer the assurance that we shall exert all desirable zeal and expedition to terminate our undertaking, the principal object of which is to make the physical causes of disease better known and appreciated.

It is pleasing to us to offer, in this place, a public testimony of our gratitude to the *élèves internes*, full of hope and promise, MM. Bazin, Tixier, and Beau, who aided us in the observation of facts, and to our excellent friend M. Ledain, who constantly attends at the visits made in the hospital, assists at our clinical conferences, and does not hesitate to mix with the pupils, and to discuss with them the still debatable points of a science which he cultivates with as much profit as disinterestedness.

The title of this work will not be a motive for excluding some cases collected out of the hospital, when they may appear to be of a character to strengthen a theoretical point. We may also insert some previous productions when they have any analogy with the subject of our new researches.

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MEDICAL CLINICS.

TOPOGRAPHY OF THE HOSPITAL NECKER.

The Hospital Necker is situated at the southwestern extremity of the *faubourg* Saint Germain, in a very salubrious situation, surrounded by gardens; at a convenient distance from the river and from every kind of manufactory of an unhealthy character, and which exhales noxious effluvia. It is built on a dry, calcareous, firm soil; the main buildings are situated east and west; the northern, eastern, and southern winds blowing there but little. The elevation of the soil and the temperature are nearly the same as those of the Observatory, and the vicinity of the garden of the Luxembourg. Unfortunately, the water for the use of the sick is furnished by the aqueduct of Arcueil, and it contains more sulphate of lime than that of the Seine, which often occasions diarrhœa. Ass's milk of good quality is to be had in abundance; and there was an excellent dairy, which has been temporarily suppressed, but, it is hoped, will soon be re-established. The alimentary regimen of the hospital is good, and the attention bestowed on the sick is generally assiduous and even affectionate; circumstances which in some measure make amends for the defective construction of the establishment, a portion of the buildings of which had formerly a very different destination.[1]

This unfortunate circumstance, which is observed also in some other hospitals, and especially at *La Maternité*, could be removed by a small share of the millions that are devoted to the buildings for luxury and ornament, which are every where erected at a heavy expense. It must be confessed that poverty, misfortune, and disease are not considered to have legitimate rights on our budget of millions; and modest asylums for health do not strike the eyes like the Temple of Glory or the triumphant arch of the Barrière Etoile. It may be truly said, that the vanity of man, which is so frequently exhausted on the tomb of the dead, attends with regret to the preservation of the living. When we reflect that it took no less than the Asiatic cholera to occasion the erection of some petty

[1] I know not whether it is to the regimen, or the locality, that the relief experienced by the consumptive is to be attributed. It is notorious that they live longer in the Hospital Necker than in the other hospitals.

fountains in the narrow, dirty, and badly ventilated streets of the capital—which possesses a provisional opera that has cost several millions of francs—we may pardon those ardent and philanthropic souls who have doubted the benefits of civilisation on masses.

Situated near the quarter of Gros Caillou, and the city of Vaugirard, which has no hospital for its seven thousand inhabitants, the Hospital Necker is insufficient; and they are frequently under the painful necessity of refusing patients, which makes the utility of a more extensive establishment in this locality more and more felt. In the same situation one might be constructed which would be more in accordance with the population of the surrounding quarters. It would be consolatory to humanity, by the aid of such improvements, if not to suppress, to greatly diminish, the number at the Hôtel-Dieu, which is seated over the river, is masked by small streets, and old buildings, and is unhappily situated in the lowest, wettest, and dirtiest part of Paris.

Such, indeed, has long been the wish of those philanthropists, who properly think that small establishments of the same kind should be preferred to large hospitals; and that the *foyers* of infection must be less extensive in them, and the mortality less.

The year 1831, the date of my appointment to that hospital, was fruitful in pneumonia, and typhoid fevers. In the year 1832 it was absorbed by the cholera morbus, of which enough has been said already. In the winter of 1833, at the commencement of the year, there were but few of those cases of pneumonia, which had been so prevalent in 1831, and which were so successfully treated by the tartarised antimony.[1] And what is somewhat remarkable, although not very uncommon in the *fasti* of the art, this mode of medication offered but little chance of success in the small number of cases which occurred to us.

We noticed another fact not without interest in the history of this heroic agent, and the therapeutics of pneumonia:—that, with the advantages of the tartarised antimony, the symptoms which it sometimes produces disappeared. We observed no stomatitis, no pustular eruptions in the interior of the mouth; and several, to whom the medicine was given, exhibited no appreciable phenomenon, no evidence of action either on the patient or on the disease. The most numerous diseases of the season were different shades of influenza (*grippe*), which generally yielded to the administration of emetine; given at times as an emetic (two to six grains), at others, in small doses (two grains), in mixtures to be taken by the spoonful.

During the spring and summer, small-pox, varicella, and erysipelas, were the most common diseases. There were, indeed, so many cases of the last affection in our wards, that there was reason to believe in the existence of a general cause acting on masses. Nor was the Hospital Necker the only one that showed this peculiarity.

[1] See the Archives de Médecine, 1831; and, farther on, the article relative to rheumatism.

In autumn, rheumatism predominated in the wards, which was treated successfully by the emetic tartar in large doses, as we shall see hereafter.

SCIRRHOUS AFFECTION OF THE ŒSOPHAGUS AND PYLORUS.

Difference between that disease and cancer.

A hackney-coachman, forty-six years of age, who said he had been sick for six months, entered the hospital on the 30th of January, 1833. This man, who was tall and of a vigorous constitution, had been unusually strong in his youth. At this time he was pale, lean, and his appearance announced deep-seated decay. He could only take fluid, and this got with difficulty into the stomach, owing to considerable dysphagia. He was troubled with nausea, and constant flow of saliva as soon as he prepared to take food; but when deglutition was accomplished, digestion went on readily and without pain; no tumour could be felt in the epigastric region, which might be pressed upon in every direction without causing the least suffering. With the exception of the dysphagia, which made us suspect the existence of an affection of the lower portion of the œsophagus, he was tolerably well, and remained in a stationary condition; but on the 20th of February, he was taken with a pleuritic pain which carried him off in two days, in spite of all the efforts of art.

On opening the body, twenty-four hours after death, traces of pleurisy were found at the outer surface of the right lung, and an effusion of about a pint of serous fluid into the cavity of the thorax of the same side. The lower part of the œsophagus was transformed into a lardaceous tube half an inch thick, and of remarkable whiteness. The same transformation occupied the posterior and superior fourth of the stomach, the capacity of which it had reduced to the diameter of about an inch. The rest of the viscus, as well as the pyloric opening, was in a healthy state, and formed a contrast with the scirrhous portion. The liver, the spleen, and the diaphragm adhered to the diseased part of the stomach—an accidental circumstance—holding it down, and not permitting it to be explored by the hand. The intestinal canal was healthy.

The kind of fibrous transformation, which the lower parts of the œsophagus and upper portions of the stomach had undergone in this case, was, I have remarked, of a dull white colour, and exactly like a fresh cartilage, obtained on opening an articular capsule. There was neither redness, congestion, ulceration, nor fungosity, at its surface.

It would be easy to adduce several similar cases, and especially that of a man who died without much suffering, in the ward St. Joseph, in a state of complete exhaustion and marasmus, and who was affected with no other symptoms than vomiting once every

twenty-four hours. After death the pyloric orifice was found very much narrowed, and the annulus of communication with the duodenum converted into a sort of fibrous and lardaceous substance, about an inch in diameter, without any other organic lesion. A goose-quill could scarcely be passed through the pylorus. This man died, owing to the mechanical obstacle to the passage of the food; for a square inch of scirrhous degeneration in any other part than at the pyloric orifice would scarcely have disturbed the economy so much.[1]

The succinct exposition of those two cases, which we might confirm by several others exactly like them, gives us an opportunity to examine the question, whether scirrhus of the digestive organs, such as those of which we have spoken, be the first stage of cancer, and whether it must necessarily proceed to softening and ulceration, as the most modern authors presume. Our opinion, we may say in advance, is entirely opposed to this mode of observation in pathological anatomy; and we refer many of the lardaceous stationary degenerations to the fibrous transformations. This opinion is founded upon the nature of the accidental lesion, and the symptoms originating from it. Let us see what description is given by authors of scirrhous affections in general. Scirrhus, says M. Cruveilhier,[2] is semi-transparent when divided into thin slices, without any linear arrangement; often lobular; having a consistence varying from that of fibro-cartilage to that of lard, which it resembles in appearance, and seeming to be constituted of a fibrous and cellular tissue penetrated by albumen. . . . . Scirrhus invades all the tissues, either primarily or consecutively; but it affects an unfortunate predilection for tissues that are very sensible, and at the same time abundantly supplied with white vessels; supervenes spontaneously or succeeds to an engorgement from some external cause, or of a scrofulous, venereal, or other character, and commonly attacks either the male or female at the critical period when they become unfit for reproduction.[3]

In scirrhus, the pains are lancinating, and shoot like lightning. The affection never retrogrades towards the primitive organisation; it proceeds, at times, with frightful rapidity, and destroys in a few months; at other times its progress is more chronic, remaining stationary for ten or fifteen years, and not appearing to hasten the time of death. It extends by continuity of tissue, and by lymphatic absorption, killing, at times, without passing to further alterations, but most commonly becoming the seat of an internal process; in some rare cases it falls into a state of gangrene, and is wholly thrown off; most commonly it passes to a state of ulcer, or rather becomes softened, and like the brain of a new-born infant.

[1] A similar case to this occurred, not many months ago, in an estimable inhabitant of Baltimore. It was attended by the editor in conjunction with an experienced friend, Dr. Pue, of that city.—*R. D.*

[2] Essai sur l'anatomie pathologique en général.

[3] *Qu.?* At what age does the male become unfit for reproduction?—*R. D.*

We ask whether such a description be applicable, in whole or in part, to the affection that engages us? Can the less characteristic traits of this description be found in the alteration of tissue presented by the patients whose cases have been detailed? As for the mollescence, which must, it is presumed, occur in these cases, we ask, again, where is the proof that this change of consistence must supervene? We think that any disease whatever, which proceeds slowly, and has remained fifteen or twenty years stationary—to adopt the figures of authors—has arrived at the term of its course, and that it is not likely to undergo any fresh metamorphosis. When such an affection is seated in a secondary organ, it plays no part in the morbid condition of the organism; and when, unfortunately, it has its seat in one of the viscera, whose integrity is essential to the maintenance of life, it can only act as a mechanical obstacle; either it may deprive the tissues of their contractile or extensible property, or obstruct the passage of materials for the nutrition and recomposition of the organs. This is exactly what happened to our three patients, who died of inanition without any suffering. A man, whom we have just seen expire of the same fibrous transformation of the pylorus, could not believe that he was sick, so exempt was he from pain. He slept soundly; ate with pleasure; but vomited every morning, almost without effort or pain, the food which he had taken the night before, in a half digested state. He was exhausted for want of nourishment; and, on examining the body, the pyloric orifice was found scirrhous, and so contracted that it scarcely admitted a goose-quill.

The patients, of whom we have spoken, were, in other respects, of sound and vigorous constitutions, and presented no sign of scrofulous affection, or of cancerous diathesis. We consider, then, that it is an abuse of language to place indolent scirrhus of the pylorus, cardia, œsophagus, and intestines, amongst the varieties of cancer; it is much more proper to assimilate it to the fibrous substance of the uterus, and other analogous transformations, which we are surprised to meet with on the dissection of persons in whom it had never been suspected, because it had produced no disorder.

Lastly, we cannot admit that this kind of lesion must necessarily pass into another state, when it has existed for a long time, during which it has been subjected to every chance of excitation capable of hastening its termination. The texture of an abnormal tissue, which has existed twenty years, ought to have long passed its apogee; [?] its history is finished, otherwise it could never have an end.

GENERAL ERYSIPELAS.

There are periods when certain causes act at once upon a number of sick in an hospital; and especially upon such as have been in for a long time. A kind of endemic arises, which attacks all

who are predisposed to it, either by debility, the consequences of previous disease, or some individual susceptibility. Thus, in the months of June and July, 1833, we saw a great many cases of erysipelas, confined, at times, to the face, at others, to the extremities; but at others, spreading, in succession, over every part of the body. In one patient, the operation for blood-letting was the occasional cause of erysipelas, which began on the arm, and terminated on the lower limbs, after having invaded the head and trunk. In another, the disease was owing to a blister applied to the temple for headache. A third was affected with erysipelas from a blow on the head. The same disease was likewise observed in a child four or five months old, which had been vaccinated, and had three vaccine vesicles on each arm. The erysipelatous eruption began at the inflammatory areola surrounding the vesicle, and soon became general.

These cases of erysipelas were not severe when limited to a part; they were extremely dangerous when they affected, in succession, several regions of the body. They rarely presented precise indications of treatment.

Blood-letting, and other evacuants, produced little or no salutary effect. A blister placed on the centre of the inflamed portion of the skin was not attended with any success. In general, whatever plan of treatment was adopted, the disease pursued its wonted course, and terminated, about the end of a fortnight, in health, when the disease was limited; and almost always in death, when the affection became general. We shall relate two cases of the latter, as it is not a common affection.

GENERAL ERYSIPELAS, AS A CONSEQUENCE OF VENESECTION—DEATH.

A woman, aged 43 years, of good constitution, had suffered, for three or four days before her admission into the hospital, with vague pains in the loins.

On the 6th of August (the day of her admission), these had augmented so much that she could not bear pressure on the pained part. There was no symptom of mischief in any of the abdominal organs. *Prescription*—Barley water with honey; tepid bath; absolute diet.[1]

On the 8th, the pain was as violent as on the day preceding, and it had extended to the thighs, so that she could scarcely move. Pulse strong and more frequent. *Prescription*—Same drink; emollient cataplasms to the loins; emollient clysters; bleeding to three cups; absolute diet. The bleeding was followed by marked relief. Blood buffy.

[1] The word *diète* is used by the French, at times, for a regulated diet adapted to the affection; at others, for abstinence from food and drink; "absolute diet" emphatically means the latter. When the author uses the word "diet," abstractedly, it has been simply translated "diet," as it is not always clear in which of the two acceptations he employs it.—*R. D.*

On the 10th, 11th, and 12th, the improvement continued. Purgative injection to remove constipation of four or five days' duration.

On the 13th, the parts surrounding the wound made by the lancet were red and painful. The pain extends to the arm, which is slightly swollen. Emollient baths to the arm; cataplasms; diet.

On the 14th, the redness was more vivid, and the tension greater, especially along the vessels of the arm. *Prescription*—Lemonade; twelve leeches to the arm; tepid bath.

On the 15th, the redness has extended, and the tumefaction has augmented, so as to invade the whole arm. The patient complains of chills; increased frequency of pulse. There can be no doubt of the existence of erysipelas. *Prescription*—Fifteen leeches; cataplasms; diet.

On the 16th, 17th, and 18th, the phlegmonous [?] inflammation has made great progress, occupies the whole arm, and is studded here and there with vesications, whence a citron-coloured serum is discharged. *Prescription*—Barley water with honey; arm bath, twice; cataplasms.

On the 19th, the erysipelas has extended rapidly over the anterior and posterior surfaces of the chest; skin red, tumefied, and sensible to the touch; respiration frequent and difficult. *Prescription*—A laxative mixture, with an ounce of cream of tartar; cataplasms; diet.

On the 21st, the exanthema has invaded the whole of the thorax, the skin of which has become shining; respiration hurried; complains of intolerable pain in every part of the body; watchfulness. Same prescription.

On the 22d and 23d, the erysipelas remained stationary. Scanty alvine evacuation; the tumefaction of the arm has diminished; and desquamation is commencing on the parts first affected. *Prescription*—Veal water, with an ounce of sulphate of soda. This cathartic occasioned three evacuations.

On the 26th, the erysipelas reached the abdomen, the loins, and nates; the pulse began to loose its firmness, without being less frequent; abdomen painful. *Prescription*—Lemonade; emollient clysters; cataplasms.

On the 27th and 28th, the patient each day lost strength; the pulse became more and more feeble; prostration extreme; slight diarrhœa. *Prescription*—Gum water, with syrup of quinces; starch clyster.

On the 29th and 30th, the prostration augmented more and more; the erysipelatous redness had almost disappeared.

On the 31st she died.

On dissection, which was carefully performed, nothing was seen to explain the cause of death; there was no pus in the vein opened by the lancet, or in the veins of the vicinity; no lesion of the intestines; none of the dermis.

GENERAL ERYSIPELAS—DEATH.

A woman, aged 22 years, of bilious temperament and delicate constitution, whose menstrual periods occurred irregularly, was admitted into the hospital on the 28th of April, 1833. She had complained for a long time of palpitation and pain in the præcordium, respiration difficult, lower extremities swollen.

Leeches were applied at different times over the region of the heart, with cupping-glasses over the bites; and a large dose of the syrup of asparagus[1] was administered. Fresh symptoms succeeded to the momentary improvement, which required blood-letting.

The bleeding produced relief, but the puncture made by the lancet inflamed and became painful, the pain extending in the direction of the veins; pus oozed from the small wound.

In the course of the eight days following, four applications of leeches were made on the affected limb; it was covered with emollient and narcotic cataplasms, and diluent drinks were directed, sharpened (*aiguisée*) by small doses of emetic tartar. Under this treatment, the symptoms produced by the blood-letting disappeared, and the patient was put upon a treatment proper for the affection of the heart. Soon fresh symptoms required a second bleeding in the arm of the opposite side. This operation was performed with the greatest care by an experienced pupil, with a lancet that had never been used.

The same success ensued as after the first bleeding; but along with it the same irritation recurred, followed by pain and swelling, which rapidly extended to the axilla. The application of twenty leeches to the part removed this pain, and appeared to turn back the evil upon its source. A phlegmonous tumour arose near the wound made by the bleeding, and at the inner part of the arm. On the same day, leeches were applied twice; the arm was kept almost constantly in a bath of marsh-mallows, or enveloped in an emollient cataplasm. This did not prevent the development of erysipelas, accompanied by a discharge of pus from the wound made by the lancet, when the limb was compressed from below upwards; fresh leeches were applied; drinks, sharpened by emetic tartar, were added. The disease made rapid progress; the patient complained of chills and general indisposition; the pulse was feeble and frequent; and, notwithstanding the nature of the drinks, there was obstinate constipation.

Soon after this, the whole of the left arm was invaded by the erysipelas, with considerable tumefaction of the whole limb. A blister was applied to the upper part of the fore-arm, in order to

[1] The *asparagus officinalis* is admitted into the pharmacopœias of Amsterdam, Brunswick, Spain, Paris, Geneva, Wirtemberg, and others. Owing to the smell which the *asparagine* communicates to the urine, it has been regarded as diuretic, but there does not appear to be any foundation for the belief. It is not in the pharmacopœias of Great Britain or this country, and is possessed of no virtues to sanction its reception into them.—*R. D.*

concentrate, if it were possible, the inflammatory fluxion, and prevent it from extending.

The effect of this epispastic was but momentary; the inflammation was not long in gaining the posterior part of the trunk; thence it proceeded in front, and to the face, descending over the anterior part of the chest; the respiration became difficult; the sleep dull, or disturbed by dreams; now and then there was slight delirium; the lower limbs, as well as the abdomen, were soon covered by an erratic exanthem, which diminished proportionately in the parts first affected; the skin became so painful that it could not bear the slightest pressure; she fell into a state of stupor, and gave at intervals indications of severe suffering. Death happened on the 4th of July, without any possibility of retarding the progress of the affection.

Necroscopy.—The erysipelatous redness, which was so intense during life, did not now exist; the skin did not appear diseased; the abdominal cavity presented nothing unusual; the intestines were slightly red externally, but internally they exhibited no lesion; the liver and spleen were likewise in a natural condition.

The lungs were slightly engorged at their posterior part, but nowise inflamed; the pericardium contained about five ounces of citron-coloured serum; the heart was of considerable size; the left ventricle dilated, and its parietes thickened; the auriculo-ventricular orifices healthy.

The cellular tissue, surrounding the veins of the arm, was engorged, but not in a state of suppuration. The median cephalic vein, which had been opened, was obliterated to a small extent. The brachial and cephalic presented no trace of inflammation. The brain and spinal marrow were not examined.

It can scarcely be doubted that there existed, in this and the preceding patient, a disposition to the diseases with which they were attacked, and of which the operation of bleeding was only the occasional or exciting cause. Bleeding was, indeed, performed daily without any such results. Moreover, in many patients of the same hospital, the like susceptibility to inflammation of the skin, and subcutaneous cellular tissue, was observed under different circumstances; and such erysipelatous affections evidently, therefore, must acknowledge another cause besides the operation of bleeding. There must, doubtless, be a general cause, as other individuals have experienced the effects of it. The two cases of erysipelas, of which we have just given the history, may be compared, in an etiological point of view, to that of general phlebitis supervening on bleeding, which cannot be referred to the simple wound made by the lancet. There is only this difference between the affections; that the inflammation of the veins leaves evident and authentic traces of their fatal effects, whilst, after death caused by erysipelas, no organic lesion peculiar to the exanthem may be perceptible. We cannot, then, attribute death to the action of a general inflammation of the skin, and of some portions of the subcutaneous cellular tissue on the nervous system; it probably results from an excessive exhaustion of the principle of life, which,

having been at strife for eighteen days with the pain, is extinguished by a mechanism that escapes us.

As for the predisposing cause, which gave occasion to the numerous cases of erysipelas observed during our attendance, it partly, perhaps, existed in the atmosphere, and was dependent on the medical constitution of the period. What suggested to us this opinion was, that several of our colleagues affirmed they had observed the same peculiarity in other hospitals.

ACUTE RHEUMATISM.

Acute rheumatism treated successfully by the tartarised antimony—Relapse—Fresh cure by the same means.

A mason, 34 years of age, who had lived in Paris for five months, was admitted into the hospital on the 3d of October, 1833. He had experienced, for some days, acute pains in the joints of the knees and wrists, with rigors and headache.

On the 4th, the pain invaded also the elbow joint. The joints were red and swollen; the skin hot and dry; urine red; pulse 86. The bowels had not been open for ten days. *Prescription*—Whey with an ounce of sulphate of soda; bleeding to four cups; emollient cataplasms.

On the 5th, the patient was in the same condition; no evacuation; the purgative *tisane* was repeated.

On the 6th, the pains were more acute, and extended to the shoulder joint; agitation; insomnia; &c. *Prescription*—Bleeding again, to four cups; whey *emetised* (*émétisé*).[1] 7th, The tartarised antimony in solution has produced several evacuations, and slightly relieved the patient; blood buffy. Lemonade; absolute diet. 8th and 9th, same prescription; broth, twice. 10th, Pains of the joints very acute. Purgative clyster; broth (*bouillons*). 11th and 12th, marked improvement; soup. 13th, Pain of the left wrist exasperated; joint again red, and tumefied. Fifteen leeches were applied; honeyed borage water[2] was ordered for drink; and half a grain of opium in the evening. 14th, Wrist less painful; but the elbow joint is the seat of a fresh rheumatic fluxion. Twenty leeches were applied to this joint. On the 16th, the elbow joint was less painful, but several others suffered severely; and it became evident

[1] The quantity of tartarised antimony added to the whey is not stated.—*R. D.*

[2] The *borago officinalis* is not in the British or American pharmacopœias; but it is in many of those of continental Europe. Both plant and flowers are regarded as demulcent, diuretic, and diaphoretic. The distilled water is officinal in Paris and Sardinia, but it possesses, perhaps, but little virtue over simple water.—*R. D.*

that loss of blood was of no service. It was now determined to give the tartarised antimony in the dose[1] of ten grains, with the addition of an ounce of syrup of poppies, in a mixture, to be taken by spoonfuls every hour.

On the 17th, the patient had had only three evacuations, without any inclination to vomit. He felt better, and had four hours' sleep. The same mixture, with twelve grains of tartarised antimony; cataplasms to the joints.

On the 18th and 19th, he was so much relieved that he believed himself cured. He now complained only of slight numbness in the limbs. The mixture of antimony was continued, but in a decreasing dose. The patient asked for food to recruit his strength, and sat up during part of the day. The antimonial mixture was discontinued, and he was permitted to take an eighth part of the usual allowance for diet. On the 21st, he had a fourth part. On the 22d and 23d, he was considered to be cured; and went from the ward into the garden, where he took cold. On the following days, he sat up the whole day; ate half allowance. He felt cold on the 29th, and remained imprudently exposed to the rain. On the 30th, the rheumatic pains returned to the knee joints. Honeyed borage; Dover's powder (twelve grains); cataplasms; eighth part of allowance only. On the 31st, he had a genuine relapse; the joints were as tumefied and painful as at the commencement of the disease. Unable to move himself in bed. *Prescription*—A mixture with eight grains of tartarised antimony, and an ounce of syrup of poppies; rigid diet. No evacuation; the proper tolerance took place immediately, which is of good augury. He was evidently, indeed, relieved.

On the 2d, the same mixture, with ten grains of tartarised antimony and an ounce of syrup of poppies.

On the 3d and 4th, the symptoms rapidly diminished under the influence of the tartarised antimony, administered in a decreasing dose (that is, eight and six grains). On the 2d day, the joints had become free, and he was permitted to take a quarter allowance.

On the following days, the convalescence made rapid progress, and he was discharged from the hospital on the 10th of November, perfectly cured.

This case appears very remarkable, in furnishing us with an example of the efficacy—twice well established—of tartarised antimony in the same case of acute rheumatism of the joints, with inflammatory fluxion, pain, tension, inflammation, and fever; but, in the second place, it attests that blood-letting—general and local, combined—does not cure certain cases of acute rheumatism, and does not even afford relief; a circumstance which, by the way, is uncommon, and was probably owing to the influence of the medical constitution of the season.

[1] The word *dose* is often used by the French writers for the quantity of any one ingredient that goes to the formation of a compound medicine. It is in this sense that it is employed here.—*R. D.*

We may add, that the inefficacy of blood-letting was, in this case, such, that it paralysed, in some measure, the action of the laxatives, and of the emetic tartar in solution, which were used simultaneously with it, although the mode of action of these last agents has considerable analogy with that of the tartarised antimony in a contro-stimulant dose. Lastly, the medicine appears to us to have been administered in this case at the fitting moment: blood-letting had failed, and it is particularly in such cases that it is proper to have recourse to the contro-stimulant method.

ACUTE RHEUMATISM OF THE JOINTS.

Treated by tartarised antimony and blood-letting.

Another mason, aged 40 years, entered the hospital on the 17th of October, 1833. For eight days he had experienced very acute pain in the joints of the knees, shoulders, and wrists. He was unable to walk, and was borne on a litter. Several of the large joints were red, swollen, and could scarcely bear the slightest motion; the skin was hot; pulse frequent (84). Had taken only an infusion of borage.

On the evening of the 17th, the day of his admission, the *élève* on duty administered to him eight grains of tartarised antimony in a mucilaginous mixture, with the addition of an ounce of syrup of poppies. The most painful joints were covered with emollient cataplasms, and he was kept on absolute diet. On the 18th, the tartarised antimony had caused no evacuation; the patient was relieved, although he had slept little. Same mixture, with twelve grains of tartarised antimony, and an ounce of syrup of poppies; lemonade for drink; diet; cataplasms; &c.

On the 19th, the pains were still very acute; every kind of motion augmenting them. No vomiting; but three evacuations during the night. The pulse had fallen from 84 to 52 beats in the minute, but it preserved the same hardness. Tartarised antimony, twenty grains, with syrup of poppies, one ounce, in a mixture; cataplasms; diet.

20th. The medicine has caused no evacuation, but the state of the articulations is still the same, although the pulse keeps at 52 beats in the minute. Venesection to four cups; and, for drink, an infusion of borage; absolute diet.

21st. The pains of the joints have almost wholly disappeared; blood drawn from the arm is very buffy; the pulse less hard, and a little less frequent, which is remarkable, but may be accounted for by the discontinuance of the tartarised antimony. Honeyed borage; cataplasms; broth.

22d and 23d. The improvement continues; the patient complains only of his shoulders, and asks for food. He was allowed soup.

24th, 25th, and 26th. Continues to go on well; walks about, and eats a quarter allowance; feels only slight pains in the shoulders.

These are met by small doses of Dover's powders, which excite copious sweats.

On the 27th, the cure appears to be perfect; the Dover's powder is still continued in the dose of twenty grains. The patient has half allowance of food.

On the 28th, he left the hospital, feeling only a slight stiffness in the limbs, and tottering in his gait.

If the tartarised antimony seems to have failed in this case, it cannot be denied that it exerted an energetic action, as it manifestly diminished the velocity of the circulation; and, moreover, the absence of every kind of evacuation proved that there was a perfect tolerance on the part of the affected organs. It is evident that we were in too great haste to give the tartarised antimony; and it was continued because the patient was in no danger. It appears certain that if blood-letting had been premised, the disease would have yielded, as it afterwards did, to the loss of blood. What occurred in this case tends to support the Italian contro-stimulant physicians, who employ tartarised antimony and blood-letting concurrently in pneumonia. We are of opinion that it is better to premise blood-letting in all cases, where the medical constitution does not contra-indicate its use.

This case may likewise aid in clearing up two points in the treatment of diseases by the tartarised antimony in a large dose. 1st. Its stupefying narcotic action on the circulation—which was strikingly evinced in this case by the rapid reduction of the pulse from 84 in the minute to 52. 2d. The tolerance which was characterised by the want of evacuations. This phenomenon it is unquestionably wrong to regard as a sign of the efficacious action of the antimony in a large dose; as in our patient, the system of medication had not complete success. Another remark, which it appears to us important to make, is this: When the tolerance is established from the first, in those that are treated by tartarised antimony in a high dose, there is no reason to apprehend unpleasant symptoms; even when the medicine does not act efficaciously. In this case, as in many others that have fallen under our observation, no unpleasant effect was produced on the digestive organs.

ACUTE ARTICULAR RHEUMATISM.

Cure by the tartarised antimony in five days.

A chambermaid, aged 33 years, of strong constitution and sanguine temperament, was attacked on the 7th of Septemper, 1833, with general indisposition, chilliness, anorexia, headache, and lassitude in the lower limbs. On the following day she felt acute pains in the knee joints, soon followed by redness and swelling.

On the following days, the joints of the feet, and afterwards those of the upper limbs, became in turn the seat of rheumatic pains, and of other inflammatory symptoms, which are the necessary concomitants.

On the 13th the patient—seeing that her disease increased daily, or at least that to a rheumatic fluxion on one point there succeeded one more violent on another, so that she was unable to use her limbs—had herself conveyed to the Hospital Necker.

14th. She passed a very bad night, without sleep; face flushed; pulse not very frequent (80); heat of skin moderate; joints of the wrists, knees, and elbows painful, red, swollen and bent; the slightest motion gave intense pain; no symptom of gastric irritation. Eight days having elapsed since the invasion of the attack; the pulse being neither very hard nor very frequent; the mouth clammy; and the tongue covered with a mucous coat; it was considered that we might dispense with a preliminary blood-letting, and administer the tartarised antimony from the first. A mucilaginous mixture was consequently given with eight grains of tartarised antimony and half an ounce of syrup of poppies, to be administered by spoonfuls every half hour. For drink, borage water: (absolute diet).

15th. The mixture has occasioned vomiting, and three evacuations from the bowels. Slight improvement in the symptoms. Same mixture, with ten grains tartarised antimony, and an ounce of syrup of poppies: (diet).

16th. The tolerance is completely established, and the patient has had no evacuation. The improvement is progressive; the pulse much less frequent, and the motions more free. Same mixture, with twelve grains of tartarised antimony.

17th. The tolerance continues: the patient has passed a good night: the pains are considerably diminished: a copious diaphoresis has broken out. Same prescription as last evening. Broth, twice (*deux bouillons*).

18th. The patient says she is cured, and wishes to take no more of the mixture, which has caused some nausea. She can rise and aid in making her bed. The swelling and redness have disappeared from the joints; she asks vociferously for food. A light soup was allowed her; but the mixture with eight grains of the tartarised antimony was continued.

19th. She vomited several times, and had some evacuations from the bowels. The *emetised* mixture was now discontinued, and she might be considered cured. She continued, in fact, to improve gradually; and at the end of a month left the hospital, feeling nothing more of the rheumatism.

This case is chiefly deserving attention from the promptitude and completeness of the cure, which was effected in less than a week. The tartarised antimony has, moreover, the honour of it. There was no relapse during the ten days which the patient passed in the hospital after the termination of the treatment. It is worthy of remark, that the tartarised antimony produced an evacuant effect as soon as the rheumatism ceased to exist; doubtless because then controstimulation was no longer practicable; or, if you choose, because there was no longer any relationship between the morbid entity and the action of the medicine [?] We are of opinion that

blood-letting was not necessary in this case, because eight days had already elapsed since the invasion of the disease; and its period of crudity—if I may be permitted the expression—was already accomplished.

We have here a case of acute rheumatism cured in less than eight days by the tartar emetic. I know not whether there are many examples of cures as promptly by blood-letting, which, when repeated, induces a greater degree of debility, and a more tedious convalescence than that which results from this treatment. On the sixth day, indeed, the patient arose and declared herself cured. According to this there would manifestly be economy of time in curing rheumatism by emetic tartar.

As for the unpleasant symptoms that are said to result from this mode of medication, we observed none of them during the whole of the last autumn and the beginning of winter, although we treated, with varying success, more than twenty cases of rheumatism by that method; and I may take this opportunity to say, that if I have limited myself to the detail of three cases, it is owing to my unwillingness to multiply, unnecessarily, facts which are already so numerous in the science, and which, consequently, could not be of any real utility.

To enable the reader to appreciate more completely the action of emetic tartar given in a large dose in the phlegmasiæ, I add here the summary extract of fourteen cases, collected at the hospital, of the employment of this medicine in pneumonia and pleuro-pneumonia; cases which have been inserted in the Archives Générales de Médecine.[1] Before proceeding to the therapeutical experiments which form the subject of the work in question, I acknowledge I had doubts as to the efficacy of the tartar emetic in pneumonia; and these doubts had partly been suggested to me by the obscurity in which many of the facts published on this subject were enveloped. They are now wholly dissipated, and I look upon the tartarised antimony as the most energetic, and the most expeditious curative agent in a great number of cases of inflammation of the chest; and I am of opinion that it agrees almost exclusively in certain medical constitutions, which will not admit of the use of the lancet.

The subject of the *first* case had been bled three times: afterwards recourse had been had to revulsives, such as a blister and sinapisms. No improvement had resulted from these agencies: a fatal termination was even apprehended, when the tartar emetic was administered. The patient was however cured.

In the *second* case, a bleeding had been practised by the *élève* on duty, which had produced no advantageous result: two doses of tartarised antimony were sufficient to cause the resolution of the pneumonia, of the existence of which the physical signs left no doubt. This course, whatever may have been its perturbating action on the female who was the subject of the case, did not

[1] Tom. xxx. October, 1832.

prevent the appearance of the catamenia at the ordinary time—which is worthy of remark.

The patient who forms the subject of the *third* case, had been bled twice; yet the physical signs of pneumonia were in no respect diminished. Four doses of the tartar emetic promptly induced that resolution of the inflammation which the antiphlogistic treatment had not even commenced.

In the *fifth* case, a relapse succeeded to the improvement consequent on four bleedings. This relapse was treated by the tartar emetic. Two doses caused it to disappear, and the patient soon got well.

In the *sixth* case, a serious relapse was caused by errors in diet; yet notwithstanding this unfavourable condition of the digestive organs, the tartarised antimony, which had already acted most beneficially on the patient, was again employed with rapid success.

The *seventh* and *eighth* were cases in which the lancet and the emetic tartar were administered concurrently on the first day of treatment, as is done in Italy—the cradle of contro-stimulant medicine; but the last was afterwards continued singly in the dose of eighteen grains, on account of the obstinacy of the disease, which, nevertheless, at length completely yielded.

In the subject of the *ninth* case, bleeding twice repeated and cupping were unable to arrest the progress of pneumonia of the severest kind. Tartarised antimony, carried to the dose of eight grains only, promptly fulfilled the indication, and cured the disease.

The *tenth* case presents this particularity, that when the tartar emetic had been used after bleeding they had again recourse to the operation; but the condition of the patient becoming worse, the tartarised antimony was again administered and carried as high as eighteen grains—a dose much greater than that given the first time. This was completely successful.

In the *eleventh* case, blood-letting was not practised, on account of a deformity of the arm which rendered the operation impracticable. The tartar emetic had the undivided honour of a speedy cure.

Lastly: the subjects of the *thirteenth* and *fourteenth* cases, which proved fatal, were in unfortunate conditions, which may account for the want of success of the tartar emetic. The first of the patients had been worn out by grief, and his pulmonary organs had been each year enfeebled and deteriorated by catarrhal affections. In the second, the pneumonia was evidently of long standing.

If we compare these facts with those related by the Italian authors on the same subject, it will be seen that I have only used moderate doses of tartar emetic (six, eight, ten, and twelve, seldom fifteen, eighteen, and twenty grains); I have considered it proper, moreover, to stop whenever the resolution made rapid progress, leaving to nature the power of seconding the medication which I employed. I have been far from repenting that I had followed this plan; and success has satisfied me that, in this case, as in many others,

nature ought never to be overwhelmed by succours of which she stands in no need.

When the disease appeared about to cease suddenly, the use of the emetic tartar was as suddenly stopped. On the other hand, when the resolution proceeded slowly, I concluded the treatment by decreasing doses. I have never exceeded twenty grains as the limit of the increasing dose. Often I added small doses of opium to the tartarised antimony to prevent nausea and vomiting—which sometimes greatly fatigue the patient—and to accelerate the *tolerance*. The antimonial or stibiated mixture was commonly composed of five ounces of the infusion of orange leaves sweetened, with or without the addition of half an ounce of the syrup of poppies; to be taken by spoonfuls every hour, or at lesser intervals, when the disease was very severe.

ACTION OF THE TARTARISED ANTIMONY IN A HIGH DOSE IN THE PHLEGMASIÆ.

Laënnec thought that emetic tartar in a high dose acted as an excitant on the animal economy, and the absorbent system in particular. Without denying to this heroic remedy the faculty of expediting interstitial absorption, and in this way even of resolving pneumonia, we think we are justified in attributing to it, besides, an action on the secretory organs and the sudoriferous exhalants. But whilst it drives outwards the excrementitial fluids that are separated from the blood, it retards, in a marked manner, the progress of that fluid in its vessels.[1] We have often seen the pulse diminished 10, 15, and 20 beats in the minute in the space of twenty-four hours, and if afterwards, owing to the progress of the disease, we were compelled to employ another agent, the pulse immediately became quicker.

When the tolerance is established—in other words, when there is no evacuation from the administration of the tartar emetic in a large dose, can we admit that the medicine is absorbed and carried into the circulation, where it may stimulate the secretory organs, and, at the same time, diminish the quantity of blood? Can we, in short, explain, in this way, the resolution of pneumonia? The question, thus put, presents an interesting problem of therapeutics for solution. When the tartarised antimony is not followed by tolerance on the part of the diseased organs, it acts as a derivative, facilitates and augments the biliary and even the urinary secretion, and produces sweating, &c. Its effects then resemble those of the

[1] It is not easy to understand how a remedy can at the same time retard the flow of blood and drive out the excrementitial fluids. The author's opinions are, however, his own; many of his theoretical considerations are more strange perhaps than strong.—*R. D.*

same agent given in a small dose, with which Bordeu, the father, and Serane, of Montpellier, perfectly cured inflammations of the chest, if we are to credit Th. Bordeu. As regards evacuations, those from the intestines are infinitely more frequent than vomiting; but neither the one nor the other is always an obstacle to the cure of these diseases, although frequently they should be regarded as incidents that contraindicate the use of the tartarised antimony in pneumonia and rheumatism. These are especially the cases in which the first dose of the medicine produces no salutary effect.

The local action of the tartarised antimony is exerted more particularly on the mouth, the tongue, the fauces, and the pharynx. On these parts we observe false membranes, pustules, &c.; but such alterations are, it must be admitted, somewhat uncommon.

The œsophagus never participates in the lesions caused by the emetic tartar, and they are more common in the intestinal canal than in the stomach.

The lower part of the small intestine and the beginning of the large, are the parts of the digestive tube which exhibit themselves more sensible to the action of the medicine in a high dose.

The lesions, which may, with most probability, be referred to the use of this agent—although they are often owing to some other unexplained cause—are injection and infiltration of the submucous tissue of the intestines, and softening of the mucous membrane. In the mouth, active inflammation, either pustular or ulcerous, is sometimes observed—a symptom which disappears rapidly after the discontinuance of the medicine. We have seen nothing similar in the stomach and intestines.[1]

Of the phlegmasiæ, acute rheumatism and pneumonia are the diseases which may be treated with most success by the tartar emetic in a large dose.

The use of this agent should generally be preceded by blood-letting, and commonly we ought not to have recourse to the one unless the other is insufficient; excepting, however, in those cases in which bleeding is contraindicated, or impracticable for some reason, as happened to us once in the case of a rickety individual, who had no veins adapted for phlebotomy. The medical constitution of the season is also at times opposed to the loss of blood. The tartarised antimony is then a valuable agent. We may, likewise, have recourse to it at the very first, when the patient is exhausted by age or other causes, and when he appears too weak to bear the abstraction of blood, or obstinately refuses to submit to it. No one will deny that, in such cases, as in many others, it is advantageous to be able to cure promptly a serious disease, which

[1] All the facts and arguments, we think, tend to the conclusion that the contro-stimulant virtues of the tartarised antimony are dependent upon its revulsive properties; that this revulsion is produced in the lining membrane of the alimentary canal; that, when it is effected, the excited actions going on elsewhere become diminished, and more or less nervous and vascular concentration takes place towards the seat of the artificial revulsion. See the editor's General Therapeutics, page 433, Philadelphia, 1836.—*R. D.*

threatens existence, by a few grains of a powder. This agent, again, may be of great value, and of convenient employment, in the country, where the physician can seldom make repeated visits to his patients. It may be possible for him, by this plan, and with the assistance of a person of intelligence, to regulate the treatment of pneumonia or rheumatism, for several days, after having largely bled the patient if he has thought this advisable.

The treatment of pneumonia by tartar emetic, appears to us especially advantageous—every other thing being equal—in the case of old persons, whose blood should be spared, and whose digestive mucous membrane is less sensible than that of the adolescent and the adult.

The rational signs which presage success to the remedy in the cases of which we are speaking—the indications being accurately determined—are the *tolerance*, or absence of evacuation, observable after the second or third spoonful of the mixture; the retardation of the pulse in the twenty-four hours; a moderate degree of diaphoresis; and a feeling of well-doing on the part of the patient. The physical signs of improvement, seated in the affected organ, are not long in manifesting themselves afterwards.

As there are medical constitutions which do not admit of blood-letting, so are there some so eminently phlogistic that they interdict the use of the tartarised antimony. For instance, after having employed it so successfully in 1831, it became impossible for us to administer it advantageously at the end of 1832, and even at the commencement of 1833. It was not until the autumn of the last year that it appeared to us to be proper to revert to its use. Once it was administered in our wards, by an *élève* on duty, during the time of the epidemic cholera. The most unpleasant symptoms were induced, and the patient died of cholera morbus, not a symptom of which existed at the time when the tartarised antimony was administered.

TUBERCLES.

TUBERCLE OF THE SPINAL MARROW.

A woman, twenty-three years old, who said she had never been sick, and whose catamenia had been suppressed for four months after her accouchement, was admitted into the Hospital Cochin, on the 18th of July, 1832, for gastric irritation. During her convalescence, she complained of pain and weakness in the legs, to which, at first, but little attention was paid, but subsequently, on a careful examination, it was discovered that the left leg was weaker than the right, and that its motions were more difficult, and its sensibility less. There was, moreover, a fixed pain in the left side, which extended from the origin of the sciatic nerve

to the extremity of the toes. The patient experienced, besides, in both the lower limbs, formication and sensation of cold.

Three blisters were applied in succession on the lumbar region, but, notwithstanding, the right leg became affected like the left; the movements became more difficult; the sensibility, which had suddenly increased, became less; and a sensation of cold was frequently experienced, with constant feeling of numbness. Four moxas were now applied, two opposite the sacro-vertebral articulation, and two opposite the second lumbar vertebra. The disease seemed to remain for some time stationary, and no fresh symptoms were observed, except an acute and deep-seated pain, and a sensation of dragging or tearing in the lumbar region.

Towards the middle of August, fever, sweating, and pain in the abdomen supervened, with augmentation of the lesions of the lower extremities. Four moxas were applied to the sides of the vertebral column, which did not allay the pain in the limbs, or the feeling of laceration of which we have spoken; the sensibility, which had been enfeebled, became exalted; the toes were retracted, and were the seat of uncomfortable lancinating pains; the evacuations were involuntary, &c. &c.

Some sympathetic phenomena subsequently arose, which were dependent upon the brain and stomach. Pains in the chest, cough, the crepitant *râle* or rattle, &c., soon announced that the lungs were not sound. The locomotive power of the lower extremities was not wholly abolished. They were kept constantly flexed, but the patient was able to extend them; they were the seat of involuntary contractions, and, at times, their sensibility was so acute that the friction of the bed-clothes became insupportable. Diarrhœa, united with increase of the febrile condition, aggravated her condition still more. She now quitted the Hospital Cochin, and died a few days afterwards at the Hospital Necker, with the united symptoms of pulmonary phthisis and disease of the spinal marrow.

On laying open the spine, the outer envelope of the spinal marrow was found covered with an exudation of blood, chiefly at the upper part; but this congestion did not exist internally and in the medullary portion. We were struck with the tumefaction presented by the spinal marrow at its lower portion and at the origin of the *cauda equina*. At this part there was a tubercle of the size of a small walnut, of a yellowish colour, adherent, on the left side, to the medullary substance, and only contiguous to it on the right side. The texture of the tubercle was firm and granular, and, at the centre, there was a slightly concave point, which appeared to be the nucleus of the organic production.

The other cavities were not opened; but, as pectoriloquism evidently existed during life, there must have been one or more tuberculous excavations in the chest.

TUBERCLES IN THE CEREBELLUM AND TUBER ANNULARE.

A child, aged eleven years, very lymphatic, and of scrofulous aspect, had been in good health until the month of February,

1833. It appeared from the account of the parents, that, at this time, she had some affection of the brain, and during convalescence ascites supervened, for the treatment of which the child was sent from Saint Flour to Paris in the month of August.

The abdominal effusion was at that time accompanied by œdema of the extremities and general infiltration. After paracentesis, compression of the abdomen was tried unsuccessfully on four different occasions. Some cathartics were also administered, and diuretics, which were borne badly, and excited diarrhœa, so that they were obliged to be discontinued. The child being intractable, and inattentive to regimen, was left to itself for some weeks. The abdomen subsided a little under the diarrhœa, which continued. About the end of October she suffered under headache in the occipital region, strabismus, imperfection of sight, great difficulty in speech, slight deviation of the commissure of the lips of the left side, &c. On this supervened a complete state of hemiplegia of the right side, with loss of sensation. Percussion, moreover, gave a dull sound in the region of the heart, and he suffered from cough, mucous *râle*, and diarrhœa. He was in this state when he was brought to the *Hôpital des Enfans Malades* on the 1st of December. His situation became progressively worse, and he died on the 6th of January, 1834.

On opening the body, a slight serous effusion was observed in the cellular tissue under the arachnoid; each of the lateral lobes of the cerebellum contained a crude tubercle of the size of a pea. In the middle lobe there was another of the size of a walnut; and in the mesocephalon a fourth, of the size of a large chestnut; a fifth was found in the peduncle of the cerebellum of the right side; and a sixth in the anterior and superior part of the fourth ventricle. All these tubercles were in a crude state.

The left lung contained only one crude tubercle, but it, as well as the right, was studded with miliary granulations. The bronchial glands were tuberculous; the cavity of the peritoneum contained only about a glassful of turbid fluid; there were numerous ulcerations at the termination of the small intestine, and in the large. The left kidney was transformed into a cyst full of urine, and it was completely atrophied. A calculus was impacted in the ureter, which prevented the discharge of the urine. The ureter had acquired the size of the small intestine, and a tuberculous ulceration occupied the posterior paries of the bladder.

To these two cases, we may add an extract from the report of a third, made at the *Hôpital des Enfans*, and inserted in the *Gazette des Hôpitaux*, of the 3d of June, 1834.

TUBERCLE IN THE RIGHT PEDUNCLE OF THE BRAIN.

A child, three years and a half old, who had every appearance of a good constitution, became suddenly dull and apathetic; soon afterwards vomiting occurred, with falling down of the eyelid, and distortion of the mouth, pain in the head at intervals, numbness in

the limbs of the left side, and strabismus in the eye of the same side. At the end of three weeks, he was unable to walk; almost constant somnolency; no delirium or convulsive movements.

He was received into the hospital on the 6th of May, where he remained until he died on the 28th of the same month. In the interval there was a gradual aggravation of the symptoms, and many others of an accessory character, which resisted the most energetic measures.

On opening the body, an ounce of limpid fluid was found in the ventricles of the brain, and a tubercle, of the size of a walnut, in the right peduncle. In the centre of this tubercle was a small excavation filled with a greenish coloured pus; the parictes of the excavation, which enclosed this organic production, did not appear peculiar or morbid. The chest contained numerous granulations, and there were miliary tubercles in the lungs and in the cellular tissue beneath the pleura; the bronchial ganglions were almost all tuberculous, and the same change was noticed in some of those of the mesentery. The termination of the small intestine, and different points of the colon, had *ecchymosed* prominences, doubtless the germs of tubercular ulceration. Towards the end of the intestinal tube, the mucous membrane was softened.

In their development, as respects the spinal marrow, tubercles follow the same laws as different congestions which most commonly affect the superior or cervical portion of that medullary cord. It is always in the vicinity of the encephalon, as M. Olivier, of Angers (*Traité des Maladies de la Moëlle épinière*), has remarked, that these organic productions are met with. He cites but one case in which the disease was seated in the lumbar region. The one we have detailed is more remarkable in this respect even, as it occupied the lower extremity of the medullary cord. The tubercle, otherwise of a unique character, was of considerable size, when compared with the majority of those met with in the different parts of the nervous system; it was purely and simply adherent to the nervous tissue, without the latter being at all changed; was devoid of cyst, and had a small cavity in its centre. The symptoms, ascribable to the compression exerted by this organic degeneration, had their seat almost exclusively in the lower limbs. It is very rare, perhaps unexampled, for organs such as the brain and spinal marrow to be attacked with tubercles, without their existing, at the same time, in several other apparatuses; thus, the subject of the case that engages us was phthisical, and there was reason to believe, from what we observed, that other organs besides the lungs were tuberculous, as was the fact in two cases of which we have yet to speak.

These two, occurring in children of almost the same age, were considerably alike; the three great splanchnic cavities contained tubercles; and if we had examined the spinal marrow and the osseous system, it is presumable that we should have discovered others.

The distinctive characters of tubercles of the brain are very uncertain, and very difficult to be distinguished from other chronic

affections of the encephalon. Cephalalgia, strabismus, deviation of the lips and eyelids, different lesions of vision, stupor, debility and even paralysis of the limbs, with great alteration of the sensibility, were the most striking external signs in the two patients whose cases have been narrated. To these must be added general derangement of nutrition, absorption, and exhalation ; but it must be admitted that all these phenomena may exist in the advanced stages of many other chronic diseases of the encephalon and spinal marrow. It is consequently extremely difficult to discriminate the tuberculous affection of the brain during life, and it would be impossible, if we could, to adopt any efficacious system of treatment.

As respects the tuberculous diathesis also, of which Bayle has related examples, formerly quoted by us in the article *Tubercules* of the *Dictionnaire des Sciences Médicales*, these two facts are worthy of interest, and we are convinced that if life had been prolonged to the age, for instance, at which pulmonary consumption is developed, almost every system of the economy would have been attacked with tubercles.

PNEUMOTHORAX AND VOMICÆ OF THE LUNGS.

FIRST CASE.

Pulmonary Phthisis—Pneumothorax—Tinkling (*tintement*)—Metallic vibration—Pulmonary fistula—Caverns—Crude tubercles of the spinal marrow.

Augustus Dubois, aged 30 years, residing at Vaugirard, was admitted, for the first time, into the hospital, in May, 1831. For several years he had been affected with cough, and had night sweats, without, however, being compelled to leave off work. At length, enfeebled by this state of languor, which had been long masked by a vigorous constitution, he determined to seek our assistance, and more particularly on account of debility of the lower limbs, which compelled him to drag his legs in walking.

Pectoriloquy and gurgling (*gargouillement*) heard beneath both clavicles, and dulness chiefly in the corresponding part of the top of the right lung, were enough to establish the diagnosis, and to induce an unfavourable opinion. At the expiration of a few months, during which he was put upon a mucilaginous treatment, to which was added a seton in the nape of the neck, with the view of combating the lesion of the spinal marrow, which was suspected from the weakness of the lower limbs, he felt so much better that he left the hospital.

On the 12th of September following, Dubois re-entered the hospital. During his absence the disease of the chest had made manifest progress, but the state of the lower limbs was evidently improved. Cough was frequent; expectoration purulent;

profuse night sweats; diarrhœa; febrile exacerbation in the evening, with redness of the cheeks, &c. Gurgling and pectoriloquy were manifest at the points above mentioned.

Until about the 10th of October, nothing particular occurred, except that the labour in respiration went on augmenting; the tuberculous expectoration was copious as well as the sweating: the diarrhœa and hectic also continued. When the chest was now examined, it presented the following phenomena.

By auscultation, an amphoric or cavernous blowing sound (*bruit de souffle*) was heard, immediately followed by a long, extensive, and strong metallic resonance, which was perceptible over every part of the chest, but much more distinctly on the right than left side. No rattle, gurgling, or vesicular murmur, was heard in any part of this side of the chest. The remarkable noise in question had sometimes the clearness, and the quality of sound rendered by brass when struck; at others it resembled rather the sonorous murmur heard when we strike the air forcibly with a flexible switch. Percussion gave a very clear sound on the right side, towards the middle part, but it was dull beneath the clavicle. The patient was put upon a purely palliative treatment.

On the 12th, 13th, 14th and 15th of October, the dyspnœa went on increasing; the tinkling or sonorous noise of which we have spoken extended to some distance; the other phenomena became aggravated, and the patient died in the night of the 15th and 16th.

Necroscopy.—The two sides of the chest presented no difference as to external shape. A puncture made at the inferior and anterior part of the right side, between two of the false ribs, gave issue to a small quantity of air only. The sternum was turned up against the neck, and the ribs were fractured near the posterior extremity, to allow of the more careful examination of the diseased organs. The right lung was crowded towards the posterior mediastinum, and covered with a concrete purulent layer. At the anterior and outer part of the upper lobe, about two inches from the top, and one from the anterior margin, a circular fistulous orifice existed, surrounded by a yellowish membranous circle, which was probably a portion of the thickened pleura, adhering to the lung, and becoming progressively thinner towards the central perforation.

The fistulous orifice, of which we have spoken, was about five or six lines[1] in diameter. Behind, near the posterior margin of the lung, and in its superior lobe, on a level with the first fistula, was another, but of different shape and dimensions. Its longitudinal diameter was about six or seven lines; the transverse being only four or five.

The cavity of the pleura contained only a small quantity of transparent fluid—about two or three ounces. To take out the lung, it was necessary to destroy numerous adhesions which attached its top strongly to the ribs; the destruction of these exposed a large aperture, which a very slight effort would have converted

[1] Twelve lines to the inch.—*R. D.*

into a third fistula. The lungs, removed from the cavity, appeared reduced to two thirds of their ordinary size. The fistulous canals, of which we have spoken above, terminated in empty, sinuous caverns, communicating with each other, and occupying the whole of the upper lobe. These caverns were divided into different compartments by filaments (*brides*), which were constituted of vascular branches that had remained untouched in the midst of the enormous destruction of the pulmonary parenchyma. The inferior lobe of the lung was compressed; gorged with blood; and granulated (*chagriné*) externally, so as to have the appearance of the spleen. It contained some tubercles. The left lung had also a cavern, and was studded with a number of tubercles. The heart was very large; which is not common with the consumptive. The intestinal canal exhibited nothing particular, except that there was an evident contraction of the transverse colon.

The lower part of the lumbar portion of the spinal marrow presented beneath its ovoid expansion three or four yellowish and transparent turberculous granulations, of the size of a large pea, and of a texture different from that of the medullary cord.

SECOND CASE.

Pulmonary phthisis—Pneumothorax—Metallic tinkling—Pulmonary fistula—Pleuritic effusion.

Nicholas Damotte, aged 19 years, painter of porcelain, of weak constitution, fair complexion and light hair, was admitted into the hospital on the 4th of October, 1832. He was in the last stage of phthisis, and exhausted by colliquative diarrhœa. Either in consequence of his debility, or his difficult disposition, he attended imperfectly to regimen. Pectoriloquy existed beneath the clavicle of the right side, with a clear and ringing sound of the same side of the chest, as well as feeble metallic tinkling. He was, moreover, subject to constant sense of suffocation, and had an imperious desire to be supported in the sitting posture, in order that he might respire. He died at the expiration of a few days, in inexpressible anguish, calling for death to relieve him. On the paper detailing the diagnosis is written—*phthisis pulmonalis: effusion into the right side and the pericardium; pulmonary fistula.*

Dissection twenty-four hours after death. The body was worn down to a skeleton: the thorax of the right side gave a clear sound over a large extent. At the first stroke of the scalpel into this part of the chest, a considerable quantity of air escaped. The right lung was reduced to perhaps the tenth part of its natural size, and crowded towards the upper part of the vertebral column under the clavicle and first rib: below, it was covered by false membranes, swimming on some ounces of a serous fluid effused into the lower part of the chest; at the upper and outer part of this shriveled lung, and opposite the second rib, an opening was perceived about a line in circumference, covered by grumous, whitish pus. Air having been blown forcibly into the trachea, bubbles were ob-

served issuing from the fistulous aperture, after having raised the circumscribed purulent layer in question. This opening communicated with a somewhat extensive cavity, the parietes of which were lined with a grayish pus. In this cavity, some of the bronchial tubes of considerable size terminated, the course of which was traced by means of a probe. The rest of the lung was tuberculous. That of the opposite side was so likewise, presenting here and there points of suppuration separated by pulmonary tissue, softened and filled with a grayish and bloody mucus.

In the pericardium there was a considerable quantity of a yellowish lemon-coloured serum.

The lower part of the small intestine was much diseased; the mucous membrane ulcerated, disorganised, and covered with pus, similar to that which oozed from the incisions made into the lung. The liver and the other abdominal viscera were sound, as well as the upper part of the digestive canal.

THIRD CASE.

Pulmonary phthisis—Metallic tinkling—Perfect pectoriloquy—Cavities in the upper lobes of the lungs—Slight effusion into the pericardium.

Louis Aubray, aged 49 years, farrier, of a lymphatic temperament, was received into the hospital on the 2d of January, 1833. He had experienced several attacks of inflammation in the chest, the first of which occurred four years before: had never completely recovered; suffering under cough, and occasionally under diarrhœa and night sweats. About two years before, he had been struck by the pole of a carriage on the chest. This contusion was followed by an abscess in the parietes of the thorax, with necrosis of the eighth sternal rib, and a fistulous aperture, which healed with difficulty. From the time of the healing of the fistula, the cough, dyspnœa, and night sweats, assumed fresh intensity; the diarrhœa became constant; the lower limbs œdematous; aphonia supervened, with watchfulness, &c. In this state he came to the hospital.

His complexion was livid; emaciation extreme; cheeks flushed; ribs prominent, and the spaces between them depressed. The limbs were œdematous; the dyspnœa considerable; and he was obliged to keep the sitting posture to avoid suffocation. The expectoration was purulent and of a greenish gray hue; the cough frequent and troublesome; the night sweats copious, &c. A drink was given him of a mucilaginous *tisane*, formed into an emulsion; and he was ordered a mucilaginous linctus, and derivative cataplasms to the feet.

On the 3d, the chest, when percussion was made, gave a clear sound over the whole of the upper part of the left side, and a dull sound at the lower part. The opposite was the case on the right side as respects percussion. On applying the stethoscope to the upper and anterior part of the left side, each time that the patient breathed, a metallic tinkling was heard, which greatly resembled the sound of a bellows blowing into a metallic vessel with a large

base. Behind and above, the respiration was cavernous; and at the lower part inaudible. Gurgling was heard beneath the right clavicle, and the respiration was bronchial in the rest of the upper lobe of the lung of that side. On a level with the inferior angle of the scapula of the left side, perfect pectoriloquy was heard; and in front, on the right side, it was less audible, but existed. The diagnosis was ;—*Phthisis pulmonalis in the third stage, with an extensive cavity occupying the whole of the upper lobe of the left lung, and containing a small quantity of fluid: a small cavity at the top of the right lung.*

The palliative treatment was continued; small doses of extract of belladonna were prescribed in linctuses (*looks*) to allay the violence of the cough; pills of cynoglossum[1] were added to procure a little sleep, &c.

On the evening of the 3d, he was threatened with suffocation; but was relieved by the application of sinapisms to the feet.

On the 4th, aphonia; respiration frequent; stethoscopic signs less intense on account of the weakness of the voice.

On the 5th, he died, after a short and placid agony.

Necroscopy twenty-four hours after death.—The chest neither contained air nor fluid: the left lung adhered on all sides to the pleura costalis to the level of the sixth rib: the adhesion was so close that it was impossible to separate the lung from it: almost all the upper lobe was occupied by a cavity containing a little fluid; this cavity was lined by a false membrane, of a whitish colour, and considerable thickness. The inferior lobe of the same lung contained a large quantity of yellowish, softened tubercles, separated from each other by firm and uncrepitating pulmonary tissue.

The upper lobe of the right lung also adhered to the pleura costalis. In its top was a cavity an inch in diameter, likewise lined by a false membrane, and containing a little pus. In the rest of this lobe of the lung there were masses of miliary tubercles. The two lobes—middle and inferior—were sound, and crepitating.

The pericardium contained very little fluid; the right cavities of the heart were distended by a considerable quantity of fluid blood.

FOURTH CASE.

Phthisis pulmonalis—Pneumothorax—Pleuritic effusion—Fluctuation on succussion—Metallic tinkling and vibration—Cessation of the tinkling for some days before death—Obliterated pulmonary fistula.

Denis Sintot, aged 27 years, joiner, of good constitution, and born of healthy parents, who are still living, had committed many

[1] The *cynoglossum officinale* is not introduced into the British or American pharmacopœias, but it is in most of the pharmacopœias of continental Europe. It has been esteemed narcotic, but is probably inert. The pills of cynoglossum, however, which are officinal in many places, owe their virtue to the true narcotics combined with the cynoglossum. The ingredients in the officinal formula are the root of the cynoglossum, hyoscyamus seed, purified opium, myrrh, obibanum, saffron, and syrup of opium.—*R. D.*

excesses in drinking without any evil consequences for a long time, excepting slight cough occurring at long intervals.

In the month of December, 1832, he perspired freely from hard labour, and became cool without taking due precautions. From this time the cough became violent, dry, and constant: he did not, however, abandon his accustomed wine and brandy.

The cough gradually increased; the respiration became distressing, and he was obliged twice to enter the Hôtel-Dieu for treatment. Some time after he last left the hospital, being unable to attend to his work without distress, he was received into the house of a relation, who carefully attended to him.

On the 18th of December, 1833, five days after this, being on his knees in the bed dressing, he suddenly felt considerable oppression, as if, he said, the chest were squeezed in a vice. This feeling gradually diminished, after the application of sinapisms to the feet and of leeches to the anus;[1] but the respiration continued panting, and neither sleep nor appetite returned. In this condition Sintot entered the Hospital Necker on the 21st of December. The oppression was considerable, the voice interrupted, and metallic tinkling and fluctuation (*flot hippocratique*) could be detected by succussion. But—the patient being of an unmanageable temper—a complete examination could not be made until the first of January.

He generally lay on his back; respiration was difficult, and accomplished thirty-five times in the minute; pulse 130; expectoration copious, frothy, and containing some yellowish, isolated, and roundish sputa; cough not troublesome; copious night sweats on the head and chest. On listening to the right side, which was very sonorous, a sort of resonant metallic vibration, similar to the sound made on blowing into an empty decanter, was heard at each inspiration, and from time to time a very distinct metallic tinkling, with simple resonance after the pronunciation of each word. The respiration was tolerably audible behind; but not at all before. The left side was healthy. When he moved the left arm, or was shaken, a manifest fluctuation was heard even at the distance of some steps from the bed. It resembled the sound made by shaking a small quantity of water in a large vessel. He slept; the evacuations were natural, and the urine scanty; but there was neither thirst nor appetite.

From the 2d to the 20th, the metallic tinkling and the amphoric vibration of which we have spoken presented much variation; but the general state of the patient changed very little. He yielded with a bad grace to the slightest examination, and frequently refused to answer our questions. The treatment was purely palliative.

From the 20th to the 25th, he lay constantly on his right side; voice veiled and very weak; right leg œdematous; neither the

[1] This is a common method of revulsive bleeding employed by the French. See the editor's General Therapeutics, page 360, Philadelphia, 1836.—*R. D.*

metallic tinkling nor the fluctuation audible; but the sonorous and resonant vibration was heard after coughing, expectoration, and pronouncing each syllable.

From the 25th of January to the 5th of February, he rose daily and walked a little, and he could lie down on the sound side, but in other respects there was nothing new in his condition.

From the 5th to the 10th, the difficulty of breathing sensibly augmented. Face pale, puffed; skin bathed in sweat; the hand and leg of the right side infiltrated and tumefied; respirations thirty-five in the minute; pulse 126; voice almost extinct, and interrupted.

On the 13th, pulse 140; respirations fifty-six; cough very troublesome.

On the 15th, in the night, he asked to be turned upon his right side, and died about midnight, without agony, having preserved his intellect until the last moment of life.

Necroscopy thirty-seven hours after death.—Considerable emaciation; œdema of the limbs of the right side, especially at their extremities; enlargement of the right side of the chest; separation of the ribs; circumscribed sonorousness around the right breast; a puncture made into this part gave exit to a gaseous fluid, which issued with a hissing noise. On opening the chest in the ordinary manner, but cautiously, a transparent fluid escaped, which was received into a pail. The right cavity of the pleura was very large, and extended into the opposite side. It was full of serous fluid, the total quantity of which might be estimated at four or five quarts. It was estimated that when the patient was in a sitting posture, the level of the fluid might be at the height of the second or third rib. Every part of this cavity was lined by a white layer of almost cartilaginous consistence and more than a line thick.

The right lung was pressed, and flattened against the vertebral column; being forcibly retained in this position by the false membrane, which entirely covered it. It was adherent to the internal surface of the ribs, by filaments doubtless resulting from a former pleurisy; adhesions which the slow and gradual compression of the fluid had elongated by pressing the lung backward.

The lung, inflated by the trachea, might be filled as far as the false membrane permitted, but the air no where escaped. To discover, therefore, the fistulous passage which had existed during life, the adventitious membrane was dissected off with great care, after having taken out the lung. Opposite a filamentous attachment, corresponding to the fifth rib, a small cavity was discovered of the size of a hazlenut, covered immediately by the membranous expansion which had been detached from the pulmonary tissue. A little further to the outside, a second pseudo-membranous layer was observed, plaited, of a round shape, about an inch broad, and slightly depressed at the centre. It formed the anterior paries of a second empty cavity, which could contain a walnut. This cavity, near its base, communicated with a bronchus a line and a half in

diameter. The first cavity neither communicated with the latter nor with the bronchi. The surrounding pulmonary tissue was healthy, but contracted by the compression: at its top, at the depth of four lines, there was an empty cavity which could contain a hen's egg. There were, here and there, also, miliary granulations.

The left lung likewise contained crude tubercles in its upper lobe. The greater part of the other two lobes was gorged with a frothy fluid of the colour of the sputa expectorated during life. The bronchi, trachea and larynx were red. Small ulcerations existed in the ventricles of the larynx.

The heart, which was of natural size, contained blackish coagula. The right ventricle was dilated, and its parietes were flaccid and extenuated.

The small intestine was studded with ulcerations, which affected only the mucous membrane.[1]

FIFTH CASE.

Pleuro-pneumonia—Fall on the chest—Vomica—Consecutive phthisis—Pectoriloquy—Tinkling of a peculiar kind—Extensive cavity—Cicatrices manifest at the exterior of the lung.

Charles Stephen Hurset, gardener, aged fifty-four years, of strong constitution, accustomed, during his whole life, to hard work, had experienced in his youth several attacks of pleurisy or pneumonia, convalescence from which had always been long; and although he appeared to be perfectly cured, he had been very subject to catarrh since his last attack of thoracic inflammation. About five months ago, in cutting down a tree, he fell on his back, from a height of about twelve feet. Immediately after this severe fall he felt pain in the left side, with dyspnœa. These symptoms yielded without the employment of any means; but cough supervened, and, a month afterwards, the pain in the side returned, and he thought he could perceive that the left side was larger than the right. The pain in the side became pulsatory beneath the left nipple, and the cough was at the same time dry and frequent, with anorexia, fever, and sleeplessness. At length, after three days and nights of almost constant coughing and great oppression, he spat up *about six pints of puriform mucus, mixed with clotted, blackish blood.* After this the cough diminished, but did not cease, and there was almost always blood in the sputa. On the 23d of October, 1833, he entered the hospital. The sputa were then manifestly purulent; he had night sweats, and febrile exacerbations; the respiration was short and difficult; the left side was larger than the right, when accurately measured.

Percussion afforded a dull sound in almost every part of the chest; respiration *tubercular;* obscure pectoriloquy in the left side, &c. On applying the stethoscope carefully, some time after-

[1] This case was reported by M. Beau, *interne* at the hospital, and published by him more in detail in the *Archives de Médecine*, with reflections to be examined hereafter.

wards, a large cavity could be detected two inches below the left clavicle; in which—when the patient was made to cough, breathe, or speak—two distinct and variable sounds could be perceived. The one seemed as if produced by drops of water falling from some height; the other might be compared to the cricking of a child's rattle, or the clacking of a small valve.

These noises were detected a number of times by the pupils, and those who attended the clinics during the last month of the patient's existence.

On the 1st of January, 1834, he died, after having lingered between life and death for a fortnight, under the last symptoms of pulmonary consumption.

Necroscopy, twenty-four hours after death.—The body, of large stature, was reduced to a skeleton. When the chest was opened, the left lung was found crowded and compressed against the ribs by the heart, which was a little out of its common position; it was strongly adherent to the internal surface of the corresponding part of the thorax.

An incision being made into its anterior part, a large cavity was perceived occupying the centre and almost the whole of the lung—having for its parietes the external tissue of the organ reduced to the dimension of an inch, or an inch and a half, in different places. The interior of the cavity was very irregular, of a triangular shape, lined by a false membrane of cartilaginous texture, and half filled with purulent matter. Between this cavity and a division of the bronchi was a direct communication, discoverable by the probe. The pulmonary tissue, which formed a thick paries to the cavity, was hard, lardaceous, and resisted the knife. It enclosed, here and there, some crude softened tubercles.

The right lung adhered at its summit only to the bony case of the thorax: this adhesion was confounded with a whitish, organised, opaline patch, of the size of a dollar. Around this granulated patch, four distinct points, concave and puckered like the anus, were remarked, which presented the most evident characters of the pulmonary cicatrices described by Laënnec. Half an inch beneath, a small mass of cretaceous tubercles was discovered enveloped in a cyst. The rest of the lung was red and gorged with bloody mucus, which oozed out on the slightest incision. There were, also, miliary tubercles in some parts.

The heart exhibited nothing unusual.

The liver was large, and had passed into the fatty state.

No lesion in the intestinal canal.

SIXTH CASE.

General erysipelas—Inflammation of the right lung—Vomica—Cure.

A woman, aged 65 years, was admitted into the hospital about the end of April, 1834, with symptoms of hypertrophy of the heart.

In the course of May, she had symptoms of cerebral congestion, which required bleeding from the right arm, by which she was

relieved; but the small aperture made in bleeding became the commencement of general erysipelas, which developed itself in two days—at first on the right forearm, and afterwards extended, in the space of a few days, to the arm of the same side, to both sides, and to the neck, back, and abdomen.

She now fell into a state of stupor; the tongue became dry and brown, &c. Every thing foretold a fatal issue, when a decided improvement suddenly occurred in her apparently desperate condition. The erysipelas ceased; but, at the same time, without any previous indication of chest affection, she was taken with a troublesome cough, accompanied in a few days with such a copious purulent expectoration, that each morning the spitting vessel was filled with it. On percussing and listening to the chest, dulness was discovered, and slight pectoriloquy at the upper part of the right lung. Diarrhœa and fever supervened on the purulent expectoration, and it was believed that the patient would soon succumb.

Although advanced in age, she had never had any affection of the chest. It was questionable whether tubercles could have been developed and proceeded to suppuration without any precursory symptom; and the respiration, although slightly accelerated, was distinctly heard over every part of the chest, excepting where we have mentioned. Notwithstanding the rapid emaciation, it was difficult to believe that she was consumptive; and this doubt assumed fresh strength, when the expectoration was observed gradually diminishing, and the patient regaining some strength. The treatment was wholly expectant, consisting of mucilaginous drinks and gummy linctuses.

On the 7th of July, the cough and expectoration had ceased; there was no longer pectoriloquy or fever; she slept quietly through the night; took some food, and began to quit her bed. The convalescence was tedious, but on the 7th of August she was discharged perfectly cured.

It would be difficult not to admit that this woman had a *metastatic* inflammation—as it would formerly have been called—of the right lung, owing to the sudden disappearance of the erysipelas; and that there had been, in addition, suppuration of a portion of that lung, and discharge of the pus externally by expectoration. The vomica could not have proceeded from the breaking down of tubercles. This is, moreover, an example of what authors have called mutation or succession of disease—*morbi mutatio vel successio*, as Bordeu and the ingenious Lorry, author of two dissertations on this point of general pathology, would have expressed it.[1]

To this case of vomica, remarkable in its origin and termination, we were desirous to add two others which fell under our observation; but, as their history is to oincomplete to figure in this work, we shall substitute for them an extremely remarkable fact, extracted from the *Recueil pèriodique de la Sociètè de Mèdecine*.[2]

[1] *De Morborum Mutationibus. De Morborum Successionibus.*
[2] Tom. viii. p. 288.

SEVENTH CASE.

Encysted vomicæ terminating by the expectoration of pus with a membranous envelope—Cure.

A man, aged 48 years, of a good constitution and bilious temperament, was attacked, at the commencement of the spring of the year 6, with pain at the lower lateral part of the left side of the chest; small, dry cough, and slight difficulty of breathing. In the course of the following summer and autumn the symptoms increased, but not very sensibly; in the commencement, however, of the winter of the year 7, they augmented with considerable rapidity, and were accompanied with weakness and emaciation.

On the 2d Pluviose, year 7, things were nearly in the same state. The voice was raucous; pulse febrile; cough less dry, and the sputa entirely mucous; the pain of the side extended to beneath the left breast. A blister over the seat of the pain, and a demulcent and slightly diaphoretic drink, constituted the treatment.

On the 12th, the expectoration was more copious and the sputa purulent. On the 29th, to smallness and softness of pulse were added fever, with evening exacerbations. His physician thought he could detect the characters of the first stage of phthisis pulmonalis; he gave an emetic, and recurred to the combined use of demulcents and *incisives*.[1]

Towards the middle of Pluviose, the dyspnœa was so urgent that he was forced to remain in the sitting posture. He was somewhat relieved, however, by a more copious and easy expectoration of pus. Same treatment: an issue in the arm in place of the vesicatory.

During the months of Ventose, Germinal and Floreal following, the symptoms acquired more intensity and complication. The sputa were purulent; the cheeks red; the emaciation extreme, and the hair fell off in quantities.

On the 1st of Prairial, anxiety, syncope, and a sense of suffocation supervened, which appeared to put him in imminent danger, when he suddenly expectorated, after a fit of coughing, more than a pint of pus, with a membranous sac as broad as the hand. After this he was a little better, until the 28th of the same month. On that day he threw up another vomica, with a similar pouch or cyst; the pus, however, was not white like the first, but yellowish.

The feeling of suffocation persisting, after the evacuation of this second abscess, his physician, on the morning of the 29th, determined to administer an emetic mixture with ipecacuanha, with the intention of favouring the rupture and discharge of the other vomicæ, whose existence was suspected. The efforts at vomiting soon, indeed, occasioned the evacuation of two other small vomicæ

[1] This unphilosophical term was applied formerly to every agent that was supposed to possess the property of dividing or cutting the humours. We still hear, amongst the vulgar, of remedies to "cut the phlegm," &c. What agents M. Bricheteau includes under the term, it is impossible to say. *R. D.*

of the size of a large chestnut, the pus of which was perfectly white.

The symptoms continued; the eyes became hollow, and the opaque cornea of a pearly white; the strength was almost entirely exhausted; when suddenly, on the 29th Thermidor following, after having been nearly suffocated, he expectorated, after an obstinate attack of coughing, nearly a quart of purulent matter as white as milk. The discharge of the cyst of this fifth vomica took place promptly, and relieved his sufferings.

From this time, the purulent sputa, cough, difficulty of breathing, and fever, ceased. The restoration to health was complete on the 15th Nivose, year 8; that is, twenty-one months after the commencement of the disease, and four months and a half after the discharge of the last vomica.

In this case, published under the approbation of a learned society, there were in the lungs successive collections of pus, which were rejected by expectoration; moreover, a cyst was organised each time around the abscess, as if to preserve the rest of the lungs from the ravages of the pus. Nothing indicated, antecedently, that the patient was tuberculous, although his disease excited the suspicion.

When Laënnec published his Researches on Pneumothorax, and announced the existence of the singular sign of the metallic tinkling—a sign which is present whenever there is a communication between the bronchi and the cavity of the pleura containing an effusion of fluid—facts of this nature were sought for with eagerness; and as several were observed within short intervals, the belief was induced that the affection was frequent. This opinion does not appear to us well founded; and for nearly four years that we have officiated at the Hospital Necker—which might with propriety be called the hospital for phthisis—we have observed only three cases of pneumothorax. M. Louis, Physician to the Hospital la Pitié, and who has examined so many bodies, has published but two.[1] In the work of M. Andral we find three cases of this complex disease;[2] and two similar facts have been reported in the service of M. Rayer, at the Hospital Saint-Antoine, and inserted in the Archives![3] Yet the phenomena that result from the compression of the lung by the external air suddenly introduced into the cavity of the pleura, by means of a fistula, do not readily escape an attentive observer; there are, indeed, cases in which we may date the period when the effusion of air took place. Our fourth case is an incontrovertible proof of what we advance here. Nor is this the only point in which that case is remarkable: fluctuation was combined with metallic tinkling.

These two phenomena are explicable by their mutual concurrence; for it cannot be questioned that the transmission of the fluctuation is owing to the presence of air in the cavity of the pleura; so that whenever the sound of fluid is heard, we may feel satisfied that

[1] Archives, Juillet, 1823. [2] Tom. ii. p. 556. [3] Tom. xvii. p. 333.

there is pneumothorax. The disappearance of the metallic tinkling some time before the death of the individual, is explained by the obliteration of the fistula, which must have been complete. Its existence was necessary for the production of the sound. It may be readily conceived that if the lungs had been less affected, or the effusion less considerable, the patient might have been cured. The case appears to me to be unique of its kind, and it was owing to it that the *élève interne* attached to my service (M. Beau), little satisfied with the theory of Laënnec,[1] determined to institute some experiments to explain the metallic tinkling—experiments which we afterwards repeated together, and the results of which were published in the "Archives." With this view, he took a glass bottle, capable of containing four or five quarts, and half filled it with water, into which he plunged a tube of small diameter; an assistant blew gently into the tube, and bubbles of air arose in succession, and broke at the surface of the fluid; the explosion of each bubble communicating to the ear of the attentive observer a sound like that of the metallic tinkling heard every morning in the case above mentioned. We have repeated this experiment a number of times, and the noise produced by the breaking of the bubble of air has always appeared to us like that of the metallic tinkling. A simple conclusion easily results from these experiments: that when the metallic tinkling is heard in a patient affected with pneumothorax, the internal surface of the bronchial fistula must be lower than the level of the effused fluid; that the air rises in bubbles to the surface of the fluid by virtue of its less specific gravity; and that each bubble in bursting produces the vibration or tinkling termed metallic. M. Beau has paid especial attention in his work to prove that the majority of known facts are favourable to his theory. It would appear that anatomical researches have established that, in these cases, the internal orifice of the pulmonary fistula opens into the cavity of the pleura, beneath the level of the pleuritic effusion.

Another circumstance in favour of this theory is that it had struck an accurate observer, prematurely lost to science (M. Dance), who furnished a foundation for it by some experiments made on the dead body. The experiments of Dance are similar to ours: although the circumstances were not the same, the results are exactly alike.

What must have been the astonishment of M. Beau, a young physician just commencing his career, when the publication of the *Dictionnaire de Médecine*, apprised him that the explanation, which he had every reason to regard as his own, was two years old—a fact which admitted of no doubt, as M. Dance died in 1832! This coincidence of ideas in two individuals who were not acquainted with each other, is calculated to show the vanity and inutility of contests as to priority of mental conceptions.

[1] This author merely says that the metallic tinkling is owing to the tremor (*frémissement*) of the air at the surface of the fluid effused into the chest.

The metallic tinkling, as characterised by Laënnec, is a very extraordinary phenomenon, which is constantly observed in pneumothorax with pulmonary fistula or pleurobronchitis; and in patients who have cavities of a certain size in the lungs with a given quantity of fluid. But that illustrious observer and they who have followed him in the same career have not remarked, that the intensity of the tinkling augments in a ratio with the size of the fistulous orifice, the number of the fistulæ, the nature of the parietes of the cavities, &c.; and that, in the second place, there are cases in which, instead of the metallic tinkling, or rather conjointly with that sound, a kind of extensive and sonorous vibration is perceived, which seems to proceed from the abrupt introduction of a strong column of air into a metallic vessel of large dimensions. This sound does not resemble the amphoric murmur (*bourdonnement amphorique*), which some authors assert they have met with in pneumothorax, and which they have probably confounded with it. It has appeared to us to be produced by the size and multiplicity of the pleuro-bronchial fistulæ, by the arrangement of the cavities which communicate together, or are divided into several compartments, and by the cartilaginous nature of the parietes of the cavities. This, at least, is what we observed during life in the subjects of the first and fifth cases, in whom this phenomenon existed in a very distinct manner. We have given to this new sign the name of *metallic vibration*, until a more attentive examination shall enable us to assign it another denomination.

The puckered and distinct cicatrices that existed at the top of the right lung of the subject of the fifth case prove, indisputably, that he had been cured of partial tuberculous affections, or of very circumscribed abscesses of the lung, and that his existence might have been prolonged had he not been exposed to fresh causes of disease. This anatomical fact, by showing the resources of nature, explains how they who are tuberculous may, under proper management and hygienic attention, survive to a good old age. We may likewise deduce this information, that phthisis is not necessarily incurable, as Bayle and other pathological anatomists who look only to the cadaveric lesions have affirmed. Medicine and Hygiène united, have, therefore, a certain degree of power over this cruel malady, when they are aided by an intelligent and firm patient. But, in order that a cure shall be effected, a very small number only of the tubercles must have suppurated at once.

The cicatrices which result from such a fortunate termination are of two kinds; some that Laënnec inappropriately termed *fistulous*, which consist in cicatrisation and the development of a semi-cartilaginous membrane in the interior of a small, shrunken cavity, are most commonly of a fistulous shape. The cicatrices of the second kind are complete, linear, and more dense than the pulmonary substance; they have a peculiar puckering (*froncement*), and are funnel-shaped externally—a pathological condition well described by Laënnec, and which those physicians who are not familiar with the study of the organic lesions of the viscera have

denied, because they have not studied them properly. The external puckered funnel, in some measure resembling the anus, is owing to the cicatrisation of the most superficial part of the ulcer, over which the pleura pulmonalis has become attached by forming strong adhesions. This funnel is continuous with the linear part of the cicatrix.

The pulmonary cicatrices lead us naturally to the vomicæ, of which, cases five, six and seven offer examples. One degenerated into phthisis; another was rapidly cured; and the third, also cured, was a most extraordinary case.

As this point of pathology has been the subject of numerous discussions, and, it appears to us, has not yet been sufficiently elucidated; and as many physicians, in imitation of Laënnec, ascribe to tubercles too absolute an agency in pulmonary affections, we shall indulge in some considerations, based on facts, which we hope at least may not be entirely devoid of interest.[1]

It has been long believed that every collection of pus in the lungs proceeds from inflammation and suppuration of the parenchyma of that viscus; but experience, joined to necroscopic researches, has shown that abscesses of the pulmonary tissue are very rare, and that the morbid changes belonging to the different forms of pneumonia, seldom present conditions of suppuration to which this denomination could be applied. It is in other lesions, consequently, that the cause and source of vomicæ must be sought for.

Amongst the physicians who have treated of this point of doctrine, some—as Laënnec—have made the disease consist almost entirely in the breaking down of tubercles;[2] others have referred it exclusively to abscesses formed in the cavities of the pleura, and which appear to have destroyed the lung by suppuration foreign to that viscus. We think that there is exaggeration on both sides; that the celebrated Laënnec was mistaken in affirming that abscesses of the lungs are a hundred times less common than the suppuration of tubercles; and that it is evidently erroneous to suppose that vomicæ are always the consequence of suppuration of the pleura (*pleurésie suppurée*). It is more rational, more philosophical, indeed, to admit, as has been done by our excellent friend Patissier, in the article *Vomique* of the *Dictionnaire des Sciences Médicales*,[3] that vomica is at times owing to abscess of the pulmonary parenchyma, which is less uncommon than is believed at the present day; at others, to purulent collections formed by the breaking down of tubercles; and, at others, to abscesses of the liver, which are discharged by the bronchi. He designates, also, by the same name, the purulent collection which proceeds from the suppuration of the pleura, and which constitutes empyema when the

[1] A celebrated professor of this capital (Paris) often asks ironically in his lectures, for any one to show him an abscess in the lung, and a case of chronic pneumonia.

[2] Traité de l'Auscultation Médiate, tom. i. p. 405.

[3] Tom. lviii. p. 315.

pus is not rejected by expectoration, as happens in the variety of which we are treating. This expectoration is not, properly speaking, a vomica, inasmuch as the lung is only pressed upon, is sound, and foreign to the disease.

1. *Vomica formed by suppuration of the pulmonary parenchyma.*—We are not unaware that Bichat advanced the opinion that pus never collects into an abscess in pneumonia. We know, also, that Bayle observed a long time ago, with a good deal of foundation, that many authors have confounded encysted abscesses of the pleura with vomicæ, as they were formerly considered. But these considerations do not prevent us from thinking, with M. Patissier, that this pathological question, when more closely examined, leads to another solution than that adopted by those celebrated physicians.

An attentive perusal of the twentieth letter of Morgagni has but strengthened us in this opinion. M. Lallemand, professor at Montpellier, at his entrance on his medical career, published several cases of true abscesses of the lung,[1] which are of a character to demonstrate that the affection is more common than is imagined. The following is an extract from two of these cases.

A female, aged sixty-five years, affected with pneumonia, died on the twenty-second day of her disease. On opening the body, an extensive abscess was found in the upper part of the right lung. The sac which contained the pus was three or four inches in diameter in every direction; its anterior paries was separated from the pleura by the thickness of a few lines; the posterior paries was much thicker; the interior of the cavity was crossed by membranous filaments (*brides*), or small septa which circumscribed different sinuses (*clapiers*). These were formed of bronchial vessels or tubes which had withstood the ravages of the suppuration. In the interior of the abscess two small portions of lung were found floating, and attached to the rest of the organ by vascular and bronchial filaments only. The pulmonary parenchyma adjoining the abscess, was soft and easily lacerable; the remainder hepatised and infiltrated with pus. At the lower part of the same lung another abscess existed, smaller than the first, but, in other respects, similar to it. Not a single tubercle was perceptible in the lungs.

In the other case, which greatly resembled the first, the right lung was found, on dissection, soft and crepitant inferiorly; hard and compact superiorly; at the top, which was plaited, and exhibited fluctuation, there was an abscess which contained a glassful of white, opaque, homogeneous pus, similar to that of a phlegmon. The cavity was three inches in diameter in every direction; its parietes were formed above by the pleuræ united and thickened, the top of the lung being destroyed; below, the tissue of the lung was found hard and compact. The interior of the abscess was crossed by bronchial vessels and tubes of the size of a writing quill; and flakes of cellular tissue—the remains of the pulmonary paren-

[1] Bibliothèque Médicale, tom. lxv.

chyma—floated in the midst of the pus. A layer of the same fluid was adherent to the whole surface of the cavity, which it lined internally.

2. *Vomica caused by the breaking down of tubercles.*—This is infinitely more common than the preceding. It proceeds from the suppuration of a number of tubercles, or rather from the purulent secretion which subsequently takes place at the surface of the encysted cavities that enclosed the tubercles. The consumptive frequently expectorate from these vomicæ after fits of coughing, and sometimes to the extent of several glassfuls of pus or purulent sputa. In certain cases, the quantity of pus is so much greater than the mass of tubercles, that a great part is doubtless the product of a secretion from the surface of the tuberculous excavations. Laënnec has clearly exhibited this in the work already cited, from which we obtain the following case:—A patient, after having had, for several months, dry cough, accompanied by dyspnœa, hectic fever, and other symptoms that led to the suspicion of the existence of pulmonary tubercles, expectorated at once, after a violent fit of coughing, nearly a glassful of puriform, opaque, and almost diffluent sputa. For about eight days, he passed, every twenty-four hours, about three pints of a similar matter. The expectoration afterwards gradually diminished, and at length totally ceased, as well as the symptoms which had preceded it, and the patient was discharged from the hospital perfectly cured.

3. *Vomica caused by suppuration in the cavity of the pleura.*—The matter of empyema, a disease which, as we have already said, is commonly foreign to the lung, and, on this account, not entitled to the name *vomica*, sometimes makes its way into the bronchi by means of a fistula or perforation into the lung, and is rejected by expectoration. Bayle first made known and described such cases. He himself died of chronic pleurisy which had suppurated, and been mistaken for phthisis. This kind of purulent collection making its way outwardly is infinitely less common than some authors have believed, who have affirmed that all extensive and sudden purulent expectorations belong to it. We possess few or no well described examples of it.[1]

4. We cannot consider in the same point of view the *kind of vomica caused by an abscess of the liver which penetrates the lung*, because that organ always participates, more or less, in the suppuration. It sometimes happens that the pulmonary organ having contracted adhesions with the diaphragm, the pus, formed in the liver, destroys and perforates that muscular septum, and penetrates the chest, whence it is rejected by expectoration. Authors have published cases of this kind of translation of abscess of the liver. To those related by Stalpart Van der Wiel, Verduc, and

[1] In the course of the last winter, we saw a case of this kind, which was under the charge of Drs. Calhoun and George M'Clellan. The young gentleman, after having expectorated large quantities of pus, is now in a fair way of recovery.—*R. D.*

Raimond, we may add here an extract from two cases inserted by Hébréard in the *Mémoires de la Société Médicale d'Emulation.*[1]

A man, aged twenty-eight, entered the infirmary of the prison of Bicêtre, on the twenty-fifth Germinal, year 10; he said he had received, eight days before, a blow with the fist on his right side, which had never ceased to pain him. On the ninth day from the accident, his countenance became yellow, and he had irregular chills, great heat in the evening, and sweating during the night. He was prescribed diluent drinks, and a decoction of *emetised*[2] tamarinds. From the tenth to the fifteenth day, the yellow tint extended to every part of the body; (same treatment.) On the twentieth day he experienced pain in the chest, cough, and night sweats. From the twentieth to the thirtieth day, the yellow tint diminished, but the pain in the chest augmented. On the thirty-seventh, expectoration of some bloody sputa; in the night, constant cough, insomnia; (a blister to the pained part of the chest.) On the fortieth, expectoration of very copious, brownish, puriform sputa, without any effort, which continued till the sixty-fourth day in terrific abundance—near two quarts a day. This expectoration was accompanied by dry heat of the skin, and obtuse pain in the right hypochondrium. He was not perfectly cured until the eighty-eighth day.

On the 14th of July, 1807, they brought to the infirmary an idiot, who complained of very acute pain in the region of the liver. He lay on his right side, and cried out whenever pressure was made on the hypochondrium of that side; (regulated diet, venesection, diluent drinks, cataplasms.) On the tenth day, irregular chills; cough, when the region of the liver was pressed from below upwards. On the twentieth day, the liver was prominent, the countenance much changed, and the emaciation augmenting as well as the debility: (a blister over the hepatic tumour.) On the twenty-fifth day, almost constant cough, with dyspnœa. On the thirty-sixth day, copious expectoration of a substance having the colour of lees of wine, which continued eight days; the hepatic tumour had subsided, and the pain was much less. On the forty-fifth day, the sputa were less copious, and had assumed a grayish hue. On the fifty-sixth day, the expectoration had ceased; and, on the sixty-third, he was cured, but had a relapse, in which the liver made a considerable projection. It was covered with emollient cataplasms; afterwards a blister was applied, and, ultimately, an incision was made into it, which gave issue to a pus similar to that which had been previously expectorated.

Although the two facts related by Hébréard required a last demonstration to establish their anatomical and fundamental character—we mean the dissection of the morbid parts—it appears difficult to raise serious doubts on this matter, especially as regards the second case, which terminated in an abscess of the liver opening externally. It must be admitted, however, that error is pos-

[1] VII^e année, page 354. [2] See page 10.

sible in these cases, as is shown convincingly by a summary exposition of the following fact, reported only a few days ago at the Hospital Necker.

A woman, sixty years old, entered the hospital on the twenty-first of last August. She had been sick, it was said, for four months. The most simple examination was enough to show that she was attacked with violent pneumonia of the right side of the chest, and jaundice, accompanied by painful tension of the right hypochondrium; in short, the aggregate of the symptoms, which we shall dispense with relating here, as well as the general condition of the patient, indicated very serious disease. She was bled from the arm, but without any success. On the following day, the twenty-third, her condition being worse, and the pulse being extremely weak, it was determined to employ the tartar emetic in a large dose; (eight grains in a mixture.) On the twenty-fourth, she appeared to be better as regarded the pain of the chest, but the tension of the hypochondrium and the yellow hue of the skin were greater. She was now taken with a copious, clotted, yellowish expectoration, which half filled the spitting vessel. She had vomited but once after the emetic tartar, and the tolerance was promptly established. Twelve grains were now given through the day, which produced no vomiting, but only some alvine evacuations. On the twenty-fifth, nearly the same state; no improvement in the pneumonic symptoms; respiration bronchial, and blowing (*souf-flante*) in every part of the diseased side. The expectoration is still striking as to colour and abundance; the right hypochondrium continues to be tumefied, and painful on pressure: (the tartarised antimony was discontinued.) On the twenty-sixth, the patient became much weaker; respiration was more difficult than the evening before; the spitting vessel was filled with expectorated matter of the colour of wine lees, or of the *sauce tomate*, exhaling a manifest fæcal smell. The abundance of this expectoration, its odour, the presence of jaundice, of intumescence and constant pain of the hypochondrium, made me believe that I had one of those hepatic abscesses which gain the lung by perforating the diaphragm. All medicine was suspended, owing to the desperate condition of the patient; and, on the following day, she died. On opening the body, we found pneumonia of the whole of the right lung, which was largely adherent to the diaphragm; the hepatisation was of a gray colour, and in a very advanced stage; the liver was sound; the intestines presented nothing particular.

Vomica may likewise owe its origin to a purulent collection formed in a dilated bronchus. The pus gradually collects in this accidental cavity, and is expelled at once when its presence becomes a sufficient cause of excitation to provoke a fit of coughing. This pus, according to M. Chomel,[1] is usually remarkably fetid.[2]

[1] Dictionnaire de Médecine, tom. xxi.

[1] In the spring of 1836, a case, apparently of this nature, fell under our charge in the Baltimore Infirmary. A man was affected with violent fits of

Vomica is not always, as we have just seen, and as our sixth case attests, the fatal termination of disease of the lung. On the contrary, it is, in certain cases, the result of a salutary effort of nature[?] In this way, according to Bordeu, the celebrated chemist Rouelle was freed from a serious affection of the lung, of which that distinguished physician had skilfully foreseen the termination. In these different cases, the cavity which contains the pus may fill up, cicatrise, or be reduced to a small capacity, of which pectoriloquy is the certain index.

Laënnec has observed more pathological cases of this nature than any other person, as is evinced by the different articles in his work on Mediate Auscultation.[1] Of all vomicæ, the most dangerous are those that proceed from inflammation of the pulmonary parenchyma, because they induce the destruction of a great part of the organ, and give rise, much more than the others, to slow fever, and to symptoms inseparable from the absorption of pus.

INFLUENCE OF HYPERTROPHY OF THE HEART ON THE BRAIN AND LUNGS.

Physiological and pathological considerations on the influence of the heart, and of hypertrophy of the ventricles of that viscus on the functions and diseases of the brain and lungs.

SECTION I.

Of the influence of the heart and arterial circulation on the brain, and on the cerebral functions—On the connection between hypertrophy of the left ventricle and different diseases of the brain, such as cerebral congestions, apoplexy, softening of the brain, mania, &c.

Vitalism, so philosophical in the school of Stahl; so subtle and metaphysical in the school of Montpellier; so seducing in the writings of Bichat; so skeptical in the school of Pinel,—has had the unfortunate result of causing every physical and mechanical theory to be discredited. There are yet vitalists, and especially those of

coughing, resembling hooping-cough, accompanied by a most profuse secretion of muco-purulent matter, so intolerably fetid that it could scarcely be examined. The excessive fetor prevented even the due use of auscultation, the breath being loaded with the odorous emanations; yet so far as it, as well as percussion, was employed, there was no indication of solidification or abscess.

The case was treated by revulsives and narcotics, and the man recovered without any symptoms of pulmonary tubercles.

A similar case has been recently described in the American Medical Intelligencer (July 1, 1837), by Dr. S. A. Cook, of Buskirk's Bridge, N. Y.—*R. D.*

[1] Page 409, et seq.; 585 to 638.

the Parisian school, who repel, with blind obstinacy, every approximation between the action of our organs and that of physical agents, properly so called. For a long time, it is true, such approximations were much abused: but now, as often happens, we have run into the opposite excess by proscribing them. We are not afraid to say, that in acting thus we seem to protest against that precept of eternal truth—that medicine should incessantly appeal to all the other sciences for assistance.

The partisans of observing or Hippocratic medicine may also be properly reproached with having committed the same fault, by repudiating every kind of connection between the action of morbific and mechanical causes. Organic medicine itself, devoted as it is to the study of the physical lesions of organs, has nevertheless greatly neglected the most material causes of disease. The same aversion has been manifest in respect to certain therapeutical agents, which act by their physical properties, such as resistance, gravity, elasticity, attraction, compression, &c. Many of them have even been in some measure proscribed from the Materia Medica.

Yet it cannot be denied that physical and mechanical causes constitute the most positive domain of etiology, and that their study is best adapted for directing the physician in the rigorous explanations which he gives of disease. We may consequently assert with conviction, and as a fact of great utility at the present day, that physical or mechanical agents, whether regarded as occasional causes of disease or as methods of treatment, deserve to be classed amongst those objects that are most capable of satisfying the mind of the enlightened physician, who is desirous of tracing the derangements which he observes in disease to their true source.

Let it be understood that we are not now speaking of comparing the organism to a more or less complex machine; of rigorously assimilating the laws of the equilibrium and circulation of fluids to those of statics and hydraulics; of calculating, as did the Iatromechanicians, the exact influence of the angles and curvatures of vessels, and of gravity and density of fluids. We speak only of the importance of bearing in mind the obstacles and resistance experienced by the blood, bile, urine, the serous and lymphatic fluids, &c., in their course or excretion; of appreciating the effects of the compression caused by increase in the size of organs, and of tumours; those of the impulse communicated to the blood by a vigorous, hypertrophied heart; the results of physical derangements, of obstacles of every kind, of ruptures proceeding from the obliteration of excretory ducts, of the stagnation of excrementitious matters, of their accumulation, of the congestion of fluids, of unequal repletion of the sanguineous and lymphatic vessels, &c.

In shaking off the yoke of the vitalists—one of the first, perhaps, which I can recollect—I endeavoured to bring back attention to the effect of physical and mechanical causes in disease, by pointing out and determining the obstacles to the expulsion of air, caused by obliterations of the intestinal tube in the primary or secondary diseases

called tympanitis;[1] by explaining the mechanism of hepatisation of the lungs;[2] of hemorrhage by compression and obliteration of vessels; and disorganisation of the viscera;[3] by demonstrating the influence which the force or hypertrophy of the left ventricle of the heart exerts on the functions of the brain, and on the production of cerebral congestions, apoplexies, &c.[4] The second edition of this memoir I shall reproduce here; with such changes as the works which have been since published on the same subject, and the fresh researches which I have made, may require. To it I shall add a second unpublished memoir, in which I shall examine, *first*, the disorder caused by increased size of the heart and its tumultuous movements; *secondly*, the influences which the increased action of the right ventricle exerts on the circulation in the lungs, on respiration, and in the production of hæmoptysis; and, *thirdly*, the obstacle which the different diseases of the lungs induce in the course of the blood of the pulmonary artery; its reflux, and the aneurismal dilatations that may result from it.

The heart, the chief agent of the circulation, is placed, as it were, in the centre of the body, to transmit by vessels, of which it seems to be the origin, the blood to convey excitation and life to every part of the economy. Might we be permitted a comparison when speaking of the functions of the organism, we might assimilate the influence exerted by this important viscus to that of a fruitful stream, spreading fecundity every where by means of a thousand channels. We may add, that as those places which are nearest the centre of irrigation acquire a greater and more productive activity, so do the organs nearest the heart receive from its impulse a more energetic vital action, and one more proportioned to the influence of their respective functions. Thus, the encephalic organ—which, as the seat of the senses and of the general percipient sensibility, exerts the greatest influence on organisation, and requires a strong and permanent excitation—receives a large quantity of oxygenised blood by the numerous arterial vessels distributed to its substance, and the blood reaches it after a short course from the centre of impulsion. Does it not appear to him who reflects on this organic arrangement, that nature has placed not far from the centre of circulation, the organs that are most important to the maintenance of life, as the liver, lungs, brain, and stomach; and that she has provided them with numerous vessels, in order that they may be largely bathed with recently oxygenised blood, which is indispensable to the accomplishment of their functions?

In general, the nearer the brain is to the heart, the more its activity is manifested by acts of a superior degree of intelligence [?] It has been long said that a short neck, and a large head at a short

[1] Bibliothèque Médicale. Tom. li. 214; 1817. Dict. des Sciences Médicales, Art. *Tympanite.*

[2] Journal Complet des Sciences Médicales, ix. 106; 1821.

[3] Idem. xxi. 175; 1824. [4] Idem. iv. 17; 1819.

distance from the chest, indicate a fertile mind and expanded intellect. It is certain that a great number of intellectual men, who by their organisation are adapted for profound meditations, and the conceptions of genius, present this peculiarity of structure; and although its influence on the intellectual condition has been denied, owing to numerous exceptions, we believe with many physiologists, that in several cases this influence is real and worthy of remark.

During intellectual labour, the blood, which commonly flows copiously to the encephalon, is sent thither with violence in those whose hearts are provided with strong parietes; the face becomes tumid and florid; the eyes red, prominent, and injected. This is the moment of inspiration, and the writer may then exclaim with truth, *Ecce Deus!*

M. Richerand knew a literary character, who, in the heat of composition, presented symptoms of a kind of cerebral fever: the face was red and animated; the eyes sparkling; the carotids beat with force; the jugular veins were turgid; and every thing indicated that the blood was carried to the brain in quantity proportionate to its degree of excitement. It was only, indeed, in this kind of *erection* of the cerebral organ that his ideas flowed without effort, and that his fecund imagination traced at pleasure animated and picturesque representations.[1] The same author speaks also of a young man, endowed with a sanguine temperament, and subject to inflammatory fever, which always terminated by copious nasal hemorrhages. During the paroxysms of this disease there was a remarkable augmentation of the strength of his intellect and the activity of his imagination. I have observed this in myself during an indisposition accompanied by manifest cerebral congestion: every thing at the time appeared easy to me, and in this state of cerebral excitement I wrote a long letter, which I have since perused with astonishment. Similar effects result when we take a strong dose of coffee to enable us to labour during the night. Doctor Olivera, a Spanish physician, established at Paris, knew a scholar possessed of an astonishing memory, who, after having vainly attempted to learn his lessons both in the erect and horizontal posture, ultimately succeeded by placing himself with his head downwards. The celebrated musician Grétry, after having elevated his imagination, and heated his brain by reading twenty times over the words which he had to depict by sonnets, afforded symptoms of congestion of the brain for three weeks or a month, during which he composed one of his operas.[2]

According to physiologists, intellectual labour is more easy in the horizontal posture, in which the blood appears to have less resistance to overcome to reach the brain; and every one knows

[1] Elémens de Physiologie, ii. 121.

[2] For some interesting observations connected with this subject, see "An Examination of Phrenology," &c., by Dr. Thomas Sewall, of Washington city, page 55. Washington, 1837.—*R. D.*

that on awaking, which usually takes place in this position, the ideas present themselves in crowds to the pre-occupied imagination. There are persons who suddenly quit their beds to make a note of fugitive thoughts, of which the memory would be but a faithless depositary. I may add, that there have been poets and literary characters who almost always laboured in the horizontal posture, from its being, according to their observation, more favourable to the intellectual process.

From an inverse relation between the heart and the brain, opposite phenomena generally result; which again is in favour of the influence exerted by the impulsion of the blood on the encephalic functions. Tall individuals, with long necks, and in whom, consequently, the brain is at a distance from the heart, do not commonly seem to be endowed with superior reason, or adorned by a brilliant mind; they are usually slow, phlegmatic, and for the most part of very limited moral activity and capacity.

If from man we descend to animals, we see, amongst the mammalia, the giraffe, the deer, and the gazelle, and, amongst birds, the goose, the heron, and the crane, with very long necks, supporting small heads, all of which have very limited intellect. La Fontaine has been extremely careful not to make them play any important part, or to ascribe to them any intellectual language, in his Fables, which exhibit a spirit of observation equally profound and philosophical. It is known, moreover, that those animals present to us the emblem of stupidity. Anatomy demonstrates that the size of the heart is small, and the action of that viscus very feeble. On the contrary, the elephant, whose head is large and nearer the centre of the circulation, is distinguished for its admirable instinct; the cat, so tractable and hypocritical; the ape, so mimical, the bear, so intelligent, and the fox, which at the court of the lion played the part of an adroit politician and an astute courtier,—exhibit nearly the same ratio between the heart and the brain. The like observation may be made of the dog, courageous and constant, the emblem of faithful friendship, resisting even ingratitude; and of the beaver, the industrious architect. This important circumstance had not escaped Legallois, who has written ingenious considerations on the heart and its functions. Those animals, said that distinguished physiologist—too soon lost to science—are the most courageous (and he might have added, the most intelligent) whose hearts are the strongest. The organ is stronger, for example, in the dog and cat than in the rabbit and the Guinea pig; it has little strength in the cold blooded animal, and especially in fishes. Bichat had also an idea of this point of physiology; he says expressly, that animals with long necks, and which, on that account have the heart more remote from the brain, so that it cannot so readily agitate that organ, have the most limited intellect, and the narrowest cerebral sphere; and that, on the other hand, a very short neck, and proximity between the head and brain, commonly coincide with energy of the latter; and, he adds, that men whose heads are very far from their shoulders, when compared with

those where the distance is less, sometimes present the same phenomenon.[1]

Every thing, therefore, concurs to prove that this connection between the action of the heart and that of the brain, which has been established by observation as an incontestable fact, is constantly kept up by the contact of arterial blood, which is the natural excitant of every organ.

Proof of this fact seems to me to be found in the enormous quantity of blood sent to the encephalon; in the force of impulsion communicated to that fluid, and in the motion which, in its turn, it impresses on the cerebral mass. Here nature seems to have so arranged every thing that a large quantity of blood should incessantly enter an organ which is in a permanent state of activity, excepting during sleep.

The ventricle and auricle of red blood, says Bichat, manifestly influence the brain by the fluid conveyed to it by the carotid and vertebral arteries. Now the fluid may, on reaching it, excite it in two ways; by the movement by which it is agitated, and by the nature of the principles which constitute it and distinguish it from black blood. It is easy to prove that the communication of the motion of the blood to the brain maintains its action and life. If we expose, on a living animal, a part of the organ, so as to see its movements, and if we afterwards tie the carotids, the cerebral movement is at times enfeebled, and the animal becomes giddy; at other times, the movement continues as usual, the vertebral arteries supplying the place of those that have been tied. In such case, no derangement takes place in the principal functions. There is always a ratio between the vital energy and the alternate depression and elevation of the brain. If a portion of the skull be removed from an animal, and the course of the blood, in all the vessels that proceed to the head, be intercepted, the encephalic movement is soon seen to cease, and life is extinguished. The same results are obtained by an equally conclusive experiment. If we inject water into the carotid of a dog, the contact of the fluid is not fatal, when the injection is performed with care; but if it be sent with force, the cerebral action is immediately disturbed, and is often restored with difficulty. At other times, agitation supervenes in all the muscles of the face, which disappears as soon as the impulse is diminished; if it be very strong, death may be the result.[2] It may thence be concluded, that the impulse and motion communicated by the heart to the brain are connected with the maintenance of the cerebral action, which augments, diminishes, or becomes extinct, according as the impulse is strong, weak, or entirely annihilated.

The pulsations, isochronous with the movements of the heart, which are perceived at the fontanelles, or in cases of wounds of the

[1] It need scarcely be said, that there is much of the imaginative and the hypothetical in the above physiological remarks.—*R. D.*

[2] Bichat, Recherches Physiologiques sur la Vie et la Mort.

head with loss of substance, leave no doubt as to the impulsion which that viscus communicates, during its systole, to the brain. This theory of the encephalic movements has been long demonstrated by the experiments of M. Richerand.[1]

What is the degree of impulsion which the blood sent by the heart communicates to the brain? Can it be estimated by that which sets in motion, at each contraction of the heart, a weight of fifty pounds suspended to the lower limbs? Or can we admit, with M. Poiseulle,[2] that the total force which moves the blood in an artery is in a direct ratio with the area of the circle of the artery; or in a direct ratio with the square of its diameter, whatever may be the place it occupies? Without replying to these questions, which are accessory to our object, and perhaps not capable of being solved, I may remark that some physiologists have endeavoured to diminish the force of impulsion of the blood on the encephalon, by advancing, that the elbow formed by the carotid canal retards the course of the fluid; but in order that this should occur, we must suppose the arterial system to be emptied at the instant when the left ventricle sends the blood to the brain, which is never the case; consequently the curvature of the carotid, like that of other vessels, can have no influence on the progressive velocity of the blood sent by the heart.[3]

The degree, then, of impulsion communicated by the circulation to the encephalon is solely in a ratio with the quantity of blood carried to it: this quantity, according to the calculations—which, it must be admitted, are sufficiently imprecise—of Keil and Haller, being nearly one half [?] of the whole of the blood contained in the animal economy.

Natural phenomena, like potent medicines, produce disorder when they are carried beyond the proper measure; thus, the access of blood to the brain, which in the healthy state is the natural excitant of that organ, becomes, when it is too impetuous, the cause of different symptoms; so that the integrity of the functions of the brain is associated not only with the movement communicated to it by the blood, but also with the amount of this movement, which must have a physiological mean. When too feeble or too impetuous, it is equally injurious. The experiments of which we have spoken, and the opinions which we have emitted, sufficiently prove this.

[1] Elémens de Physiologie—Mémoires de la Société Médicale d'Emulation. 3e année.

[2] Thèses de Paris.

[3] Were it necessary to give a trivial demonstration of this reasoning, and yet an entirely physical one, I might say, that by curving in various directions a tube filled with water, and adapting to it a piston, we may see that the impulsion given it by the piston has the same result, as if the apparatus was straight; that is, the jet is continuous.—*B.*

Yet the author, farther on, appears to support the opposite view. It is well known that the jet from a pipe of a regular curve, connected with a reservoir, rises much higher than from a pipe, the curve of which is less, or which is angular.—*R. D.*

It is but necessary to observe for some time attentively those who are labouring under what is called active aneurism, or better, hypertrophy of the heart, to see that excess of action in that organ induces considerable derangement in the functions of the brain, and frequently becomes the cause of serious and mortal disease. Patients thus situated often complain of headache, giddiness, and, at times, lose all consciousness, in consequence of more or less cerebral congestion, or of a momentary sanguineous rush, (*raptus*,) constituting what is commonly called *le coup de sang*.[1]

In many cases we may refer to the same cause the sensation of warm vapours about the head, of which they who labour under aneurisms complain, tinnitus aurium, convulsions of the muscles of the face, optical illusions, and even blindness, which sometimes precede apoplexy, and, lastly, cerebral hemorrhage itself.

If we examine those who experience the symptoms in question, as I have done for several years, we find the pulsations of the heart strong, precipitate, and often disordered; that the patients have long experienced palpitations augmented by the slightest exertion; that the pulsation of the carotid, radial and temporal arteries strike the finger with force; that the face is at intervals of a more or less violent red; the respiration hurried, &c. These last symptoms indicate that the left ventricle of the heart has acquired an augmented action, that it sends the blood with too great energy to the brain, and that it may tear, by too strong impulsion, the soft and delicate substance of that viscus, and give occasion to rupture of vessels, and, consequently, to cerebral hemorrhage.

It yet remains for us to sketch an historical summary of the correspondence between hypertrophy of the heart and lesions of the brain; to make known some of the facts embodied by authors, and to detail succinctly those which we have collected.

The coexistence of hypertrophy of the heart with disease of the brain is a very frequent physiologico-pathological phenomenon, which has been studied, however, but lately by those who have devoted themselves to the examination of the head. Many authors worthy of credit—Corvisart, for example—have asserted that Morgagni had described cases relating to this pathological point; but what that distinguished physician has said is extremely vague, and the most attentive perusal does not discover one conclusive fact.[2]

It appears that Baglivi first remarked—on opening the body of Malpighi, who died of apoplexy—a considerable thickening of the parietes of the left ventricle of the heart; but he was satisfied with noting this organic lesion, without deducing any conclusion from it in reference to apoplexy.[3] Gibellini, in a work entitled *De quibusdam Cordis Affectionibus*, relates the detailed history of apoplexy

[1] *Coup de sang* means the loss of sensation and motion, resulting from cerebral hemorrhage, or from simple congestion of blood in the cerebral vessels.—*R. D.*

[2] Epistol xi., No. 16.

[3] Historia Morbi et Sectionis Cadaveris Marcelli Malpighi, archiatri pontifici. Opera omnia, tom. ii. p. 380.

dependent upon the same cause. The following are its principal features. A man who, from his youth, had experienced palpitations, and who after mental trouble had presented different symptoms of aneurism of the heart, was struck with apoplexy after a full meal. He immediately became hemiplegic; his heart beat with violence, &c. These symptoms were relieved by bleeding, and he began to recover, but the signs of aneurism persisted. Eight months afterwards, a fresh attack of apoplexy occurred, which was cured by the same means; but at the end of some time the patient became again hemiplegic after an augmentation of the symptoms of disease of the heart. At length, the symptoms having progressively increased, they brought on a final attack of apoplexy, which carried him off. On dissection, there was found in the upper part of the left hemisphere of the brain, a pouch inclosing a half ounce of *decomposed lymph;* the ventricle of the same side was considerably distended, and contained a polypiform concretion (doubtless of blood); the lung of the right side was hepatised; and the heart, the size of which was doubled, adhered every where to the pericardium.

Lieutaud, after having related the case of Malpighi, as given by Baglivi, narrates in his work the following fact. A man 32 years old, a great drinker, (*potator strenuus*,) and almost always stupefied, had been subject for fifteen years to violent palpitation, succeeding to a bruise on the chest. These palpitations were perceptible to both eye and ear. He died suddenly and unexpectedly. On dissection, the cavity of the right ventricle of the heart was found larger than natural; and the ventricles of the brain were filled with black, grumous blood:—"*Lustrato cerebro, occurrunt ventriculi sanguine nigro et congrumeto turgidi.*"[1]

It is important to remark, that the two last authors, and doubtless others, in pointing out some cases of disease of the heart accompanied by apoplexy, have established no relation between these two affections. Corvisart himself asserts, that his practice has presented to him no fact of that nature. From what I have observed, it seems to me impossible, that amongst the patients subjected to the observation of that great physician, celebrated for his perspicacity, several must not have presented this coincidence; there is every reason to believe, that it was owing to his not having examined the pain; that he did not observe them. This suspicion is converted into certainty, when we notice, in several of his cases, the supervention of paralysis, evidently owing to some cerebral effusion. The *third* is especially remarkable. In the *sixth*, a person, labouring under aneurism, died suddenly during the night; the brain was not examined. As, in the majority of cases that I have seen, apoplexy occurred during the night: on the following day there was only paralysis.

M. Richerand, who has spoken, either in the *Mémoires de la*

[1] Histor. Anat. Med. Observ., 267. The author does not speak of the left ventricle of the heart.

Société Médicale d'Emulation, or in his *Elémens de Physiologie*, of the influence of the heart on the brain in the state of health, appears to have been one of the first that recognised this influence in cases of hypertrophy of the left ventricle of the heart, and who has justly appreciated it, by indicating one of its most remarkable effects. "The examinations of bodies of persons, who have died of apoplexy," says he, "have proved to me, that excess in the force of the left ventricle is an arrangement more favourable to apoplexy than a short neck, which, united with a large head, constitutes, according to the majority of physicians, the apoplectic make."[1] Numerous facts have proved the justice of this remark, which was put forward as a kind of feeler.

On the 27th Nivose, year XIII, Legallois read to the society of the *Ecole de Médecine*, of Paris, a very curious case of apoplexy, dependent on the too great force of the aortic ventricle. The woman —the subject of it—could make no sudden movement, without danger of suffocation; copious sweats accompanied this feeling; she slept but little, and could lie only on the right side; too tight clothes were singularly inconvenient to her. She had great appetite; and although her countenance was habitually pale, she was liable to frequent attacks of nasal hemorrhage. A violent or "thundering" (*foudroyante*) apoplexy terminated her career about her fifty-fifth year. The substance of the brain was torn, and infiltrated with blood, of which the ventricles contained also some ounces. The left ventricle of the heart was so large, and its parietes were so thick, that the author of the case properly regarded this hypersarcosis as a presumable cause of the *coup de sang*,[2] which had so suddenly ended her days.

M. Richerand subsequently communicated to the *Ecole de Médecine* a fact, highly important to the subject of which we are treating, and of which one of the most illustrious physicians and philosophers of this age (Cabanis) was the subject. In April, 1807, Cabanis had an attack of apoplexy; the first symptoms of which were dissipated by the resources of art. Two fresh attacks took place in the course of the autumn and before the spring of 1808, when fresh symptoms indicated a relapse. At length, on the 6th of May, a last, violent (*foudroyante*), apoplectic stroke terminated, in a few hours, the days of one who was so precious to science and philosophy. Dissection showed that the left ventricle was at least three times the natural size and strength, and its parietes were more than an inch thick; so that, at first view, there was an evident disproportion between the central organ of circulatory impulsion, and the rest of the machine. The ventricles of the brain contained about eight ounces of coagulated blood. The irruption had been so violent, that the partition called the *septum lucidum* was broken, and the substance of the projecting eminences in the interior of the cavity—as the optic thalami and corpora striata—was altered.

[1] Nosographie Chirurgicale, tom. iii. p. 15.

[2] See note to page 49.

The facts which we have cited would be enough to establish that there exists, in certain cases, a connection between hypersarcosis of the left ventricle, and different affections of the brain, especially apoplexy; at least, he who would maintain that this connection is uncommon, must found his opinon upon a small number of facts. This M. Rochoux has done, in his work on apoplexy, published in 1814, without reflecting, I believe, that a phenomenon may seem to be rare for no other reason than that it has not been sufficiently studied and confirmed. Such was the point of pathological physiology which I proposed to elucidate in 1819, by publishing the memoir, of which I have just given the theoretical part, with some modifications. This part was there supported by a goodly number of precise and positive facts, which formed the new complement and basis of this memoir. I shall reproduce these facts in the second part of this work, with some others drawn from my own observation, or from certain dissertations which have appeared on the subject.

Notwithstanding the authentic facts which had been published concerning the influence of the heart on the brain, and the connection of hypertrophy of that organ with apoplexy, it may appear surprising, that the author above cited should have persisted in his opinion for several years after the publication of those facts;[1] and yet, without speaking of my own opinion, and the cases which I have related in support of it, if I take up at random certain dissertations on diseases of the heart—that of M. Guillemin, for example,[2] in which the author had in no respect in view to treat of this point of pathological physiology—I see, that in six cases which he details, four present, in an evident manner, the coincidence between hypertrophy of the left ventricle and apoplexy. The author of another thesis, entitled, *On the influence of the heart on the brain, considered in respect to apoplexy*,[3] who has treated his subject in a very extensive general point of view, relates thirteen cases of different diseases of the brain, in which he supposes that the action of the heart has been more or less implicated. Six of these cases exhibit remarkable coincidence between hypersarcosis of the left ventricle and effusions of blood and cerebral congestions! all of which was proved on dissection. I ought to remark on this occasion, that M. Rochoux, who has spoken of this dissertation in the second edition of the *Dictionnaire de Médecine*, endeavours to weaken the importance of the facts, by remarking that one only presented an accumulation of blood in a cavity (*foyer*), although there are at least two. To this it may be replied, that neither M. Ravier nor myself have ever pretended to limit the influence of the left ventricle on the encephalon in a state of disease to the production of sanguineous effusion; on the contrary, in my memoir, I particularly extend it to sanguineous congestions, and to *ramollissement* of the brain. As for the small proportion of cases of

[1] See the Dict. de Médecine, article *Apoplexie*.
[2] Paris, 13 Juin, 1818—Thèse.
[3] M. Ravier, Paris, 1821.

hypertrophy of the left ventricle, which M. Rochoux says he has found in researches made on forty-two patients, I may observe, that this is a small number on which to establish statistical data. In the second place, I may adduce an objection already made by M. Andral to M. Rochoux, in his work on pathological anatomy,[1] that, at the period when M. Rochoux wrote, hypertrophy of the heart was a disease generally unknown to physicians, and that, therefore, it may have often escaped the pathological anatomist. If M. Andral held this language at the time, he will doubtless not change it now, and accord with our antagonist, that hypertrophy is rarely coincident with apoplexy; as he has recently inserted seven or eight cases in the 5th volume of the third edition of his *Clinique Médicale.*[2]

Lastly, I must not neglect to observe to M. Rochoux, that on this point of doctrine he is in opposition to the most distinguished pathological anatomists—MM. Lallemand, Broussais,[3] Andral, Bouillaud, &c.; and that his singular perseverance, in the teeth of facts and opposing authorities, does not prove the exaggeration of which he gratuitously accuses me.[4]

His statistics—to the number of forty-two—doubtless have not power enough to invalidate the positive facts which I have related, and those that I have cited; not limiting myself to apoplexy, as he insinuates, but extending the influence of hypertrophy of the left ventricle to the different diseases of the brain, of which I have spoken above. Besides, I appeal to the good faith of the author. What do statistical computations most commonly prove? excepting that, for a given time, a certain number of facts occur under the influence of unknown causes; and, subsequently, we have another series of analogous facts, but with different modifications, &c. Lastly, I have a right to complain of the garbled and inaccurate manner in which the author has analysed my memoir, which he seemed to have forgotten in the first edition of the *Dictionnaire de Médecine.*[5]

The reader will pardon me if, in terminating this too protracted discussion, I add one word more. How does it happen that M. Rochoux remains alone sceptical regarding a theory so simple; I had better say, a fact of pathological physiology so manifest,

[1] Précis d'Anatomie Pathologique, liv. ii. 757.

[2] Clinique Médicale, tom. v. (Maladies du Cerveau).

[3] Experience daily attests, that hypertrophy of the heart contributes to the continuance of gastritis, and that these two affections united lay the foundation for cerebral hemorrhage, apoplexy, &c. Broussais, Histoire de la dernière maladie du Général Foy.

[4] How can I be charged with exaggeration, seeing that I have done nothing more than state the proof of the facts, without establishing any determinate proportion?

[5] There are, besides, in the discussion of M. Rochoux, objections which I do not comprehend, such as the following:—"there would be nothing to object to M. Bricheteau, if we could conclude from the six cases which he relates, that all those he has seen resemble them."

I have drawn no such conclusion. What advantage would there be in such a conclusion?

founded on physiological considerations, and on the positive experience of such men as Legallois and Richerand, and upon numerous facts, which he only attacks by limiting their effects, and by opposing other facts observed in a given time? As if negative facts collected by him—and these few in number—could annul positive facts observed under other influences in the same period!!

MM. Bertin and Bouillaud, in their work on diseases of the heart, published in 1824, admit without any hesitation, and in the most precise terms, which we cite, the influence of hypertrophy of the ventricles on the organs, and especially on the brain and lungs. "Nothing is better demonstrated," say they, "in physiology, than the influence of the left heart on the circulation in the encephalon. Consequently, it might be admitted *a priori*, that one of the immediate results of hypertrophy of the left ventricle must be predisposition to apoplexy, encephalitis, and all kinds of cerebral irritations. What reason, indeed, foretels, observation confirms in too positive a manner. The majority of those in whom we have observed hypertrophy of the left ventricle have presented symptoms of cerebral congestion, and several have died of it."[1]

In 1828, M. Menière published a memoir, entitled, *Observations on Cerebral Hemorrhage during Pregnancy, and at the time of, and subsequent to, delivery.*[2] He cites, at the end of his memoir, the curious remarks of one of his friends, who had examined a number of women who had died at different periods of pregnancy, or a little after delivery, in whom the left ventricle was evidently hypertrophied—that is, much more than double that of the right (a ratio established by Laënnec).

It was natural to think, that this morbid phenomenon was the result of excess of nutrition—of local plethora, produced by retention of the catamenia, whence the necessity of frequently bleeding females in this condition.[3]

It was natural also to infer, that this state of hypertrophy doubtless played some part in the production of the cerebral hemorrhages, which prove fatal during pregnancy and labour. But notwithstanding the plainness of this induction, M. Rochoux, always ready to make war against the material organic actions of the animal economy, will not admit it; and in order to repel it, he asserts, that women more frequently die of apoplexy, after the cessation of the catamenia, than during their period of fecundity. If this be an objection, I do not understand it. That women are subject to cerebral hemorrhage during gestation and accouchement, is a fact; it has been verified by M. Menière, and cannot be questioned without doing him injustice. And if in these women, or others similarly situated, hypertrophy of the left ventricle was remarked, we may say, that such a condition of the heart may have contributed to the development of the apoplexy.

[1] Traité des Maladies du Cœur et des Gros Vaisseaux, p. 351.
[2] Archives Générales de Médecine. Avril, 1828. Tom. xvi.
[3] This idea we thought had been exploded by the initiated.—*R. D.*

M. F. T. Larroque, assistant surgeon to the 47th regiment of the line, towards the end of the year 1833, addressed to the *Académie Royale de Médecine* a memoir on the subject which occupies us. It had for its title, *Cases of Apoplexy, referred to hypertrophy of the left ventricle of the heart.* This communication, which contains some judicious remarks on the nature and seat of the cause that produces cerebral congestion, is valuable, on account of the exposition of the characteristic symptoms of hypertrophy of the heart, from its origin and during its development. It contains seven cases; two of apoplexy, and five of cerebral congestion.

This influence of the heart on the brain, or this connection between the diseases of the heart and those of the brain, had not escaped those physicians who devote themselves especially to mental diseases, which are doubtless almost all owing to physical lesions of the encephalic organ. Thus, my excellent friend, M. Falret, one of the physicians to the division for the insane in the *Hospice de la Salpêtrière*, has given me a note, from which it appears, that in ninety-two cases of dissection of such as had died of long-continued insanity, twenty exhibited different lesions of the heart, coincident with chronic alterations of the brain, or of its membranes,—alterations, in which sanguineous congestions, and cerebral hemorrhages, played a considerable part. At the end of his note, M. Falret adds, that this proportion between the diseases of the heart and those of the brain, is still greater in the fine establishment for the insane, which he directs, conjointly with Dr. Voisin, at Vanvres, near Paris.

Since the publication of my first researches on this point of pathological anatomy and physiology, I have repeatedly seen the influence of this state of the heart (hypertrophy) on cerebral congestion, and sanguineous effusion, which so frequently occur in the brain at an advanced period of life. I may refer—as containing some new documents of my own—to the medical part of the annual reports of the *Société Philanthropique*, from 1823 to 1830, and to some facts published in the 31st volume of the *Journal Complémentaire des Sciences Médicales.*

FACTS RELATIVE TO THE INFLUENCE OF HYPERTROPHY OF THE VENTRICLE OF THE HEART ON THE DEVELOPMENT OF AFFECTIONS OF THE BRAIN.

We consider that there are three kinds of cerebral lesions, which may be produced by the morbidly augmented action of the heart—sanguineous congestions, effusions of blood, and softening and disorganisation of the cerebral substance, with or without effusion of blood.

Sanguineous Congestions of the Brain.

CASE I.

Symptoms of hypertrophy of the heart—Attack of apoplexy—Death—Sanguineous congestion in the cerebral vessels and sinuses—Hypertrophy of the left ventricle.

Louis Germain, aged 57 years, had been rickety in his infancy; his chest was badly formed; neck short; head large; and face florid. For some years he had experienced palpitations, for which he entered the infirmary of the *Hospice de Bicêtre*, in July, 1814. His pulse was then frequent, hard, and irregular; the beats of the heart were very extensive, and sensible to both sight and touch. General blood-letting was advised, with leeches to the region of the heart, &c. He was tranquil, when, after a full meal taken in the evening, he suddenly experienced great difficulty of breathing, with loss of consciousness. The mouth was filled with foam; the countenance became livid; and he expired soon afterwards.

Necroscopy.—The sinuses of the dura mater were gorged with black and fluid blood; the substance of the brain was very firm, and the vessels of that viscus much engorged; but there was no blood effused, either into the cerebral tissue, or into the encephalic cavities. The left ventricle of the heart was of considerable size; the thickness of its parietes appearing to be more than doubled; and its capacity rather smaller than otherwise.[1]

CASE II.

Attack of apoplexy—Death—Sanguineous engorgement of the brain and the cerebral vessels—Hypertrophy of the left ventricle.

Marteau, attendant at the Hôtel-Dieu, aged fifty years, of an irritable temper, had been long a prey to private grief. His countenance, and especially his lips, were habitually of a purplish red colour.

On the 16th of April, 1819, he was found lying, without consciousness, on the floor of his chamber; his face livid; eyes fixed; pupils dilated; respiration stertorous; pulse small and slow; skin cold and insensible; limbs completely relaxed, &c. He was immediately taken into one of the wards of the hospital, where he expired six hours afterwards, notwithstanding the most active and skilful attentions.

Necroscopy.—The vessels of the brain were gorged with blood, and the cerebral substance was strongly injected; the most careful investigation could not discover any trace of sanguineous effusion; the lungs were slightly gorged with blood. The heart, which was of considerable size, presented a marked thickness of the parietes of the left ventricle. The auriculo-ventricular septum was also very thick.

[1] This is by no means an uncommon occurrence.—*R. D.*

CASE III.

Symptoms of apoplexy—Death—Engorgement of the vessels and cerebral substance—Hypertrophy of the left ventricle.

A man, aged forty-five years, was attacked, on the 8th of February, 1818, with every symptom of an apoplectic seizure. He was received into the Hôtel-Dieu on the same day. The symptoms had then disappeared, with the exception of some embarrassment about the tongue, and slight hemiplegia. The pulse was frequent and hard, and the heart beat with much force. On the following day, the speech was greatly embarrassed; the face pale and swollen; the mouth frothy; the respiration noisy, and the heart beat with force. (Bleeding from the foot; sinapisms; *emetised*[1] drink.) On the 10th, all the symptoms became aggravated; complete hemiplegia; respiration stertorous; pulsations of the heart very strong and irregular; pulse small; death.

Necroscopy.—The cerebral substance was firm and sound; vessels greatly injected, exhibiting minute drops of blood when the organ was removed by slices; cerebral protuberance slightly softened; heart bulky; parietes of the left ventricle much thicker than natural, whilst those of the right side were extenuated at certain points. The auriculo-ventricular cavities were in a healthy state.[2]

CASE IV.

Symptoms of apoplexy supervening in the course of disease of the heart—Death—Sanguineous congestion in the brain and arachnoid—Hypertrophy of the heart.

On the 22d of May, 1820, a man was brought to the *Clinique interne* of the Faculty in a state of profound coma. It was impossible to obtain from him the least account of his disease. It was merely learned, from the persons who accompanied him, that he had been sick for three or four days, and had been almost the whole time in this state of stupor. The most prominent symptom was the coma, which became more and more intense. The face was red; the lips bluish and livid, as is frequently observed in organic affections of the heart. The pulsations of that organ were not very tumultuous; the respiration was loud and somewhat difficult. He died about 11 o'clock at night.

Necroscopy.—The body was of mean stature; there was no infiltration, as is seen in advanced stages of heart affections, but merely some livid spots, and dilated veins on the forehead. The dura mater was very adherent to the cranium; the arachnoid gorged with blood, as well as the sinuses and veins, which, when opened, discharged a large quantity of black blood. The cerebral substance was firm; the convolutions were red, especially at the inferior part of the right side. On cutting into the cerebral mass,

[1] See note at page 10.—*R. D.*

[2] Dissertation sur quelques Maladies du Cœur, par Guilhomet. Paris. Thèse de 1818.

a large quantity of minute red points were perceived in the medullary substance, which gave issue to small drops of blood. In each of the lateral ventricles there were two ounces of bloody serum. the pericardium also contained a small quantity; the heart did not appear to be larger than natural; the parietes of the cavities of the right side were extenuated and flaccid; those of the left very thick and extremely hard. The ventricle of the same side seemed a little larger than natural, and contained some fibrinous concretions. The other viscera were in a healthy state.[1]

CASE V.

Vertigo—Confusion (*etourdissements*[2]) after palpitation—Attack of Apoplexy.

Sanguineous congestions in the encephalon, before causing death, frequently produce, for a number of years, confusion, vertigo, depravation of hearing and sight, partial paralysis, &c.

Martin Renaud, bootmaker, aged thirty-nine years, lost his father from apoplexy at the age of sixty-eight. After ten or twelve years military service, Renaud settled in Paris. Having been unfortunate, he experienced much mental distress. Three years ago, he felt violent palpitations, which gradually diminished under the influence of medicine. After these palpitations, in the month of July, 1818, he began to have vertigo and confusion, accompanied with tinnitus aurium, which threw him into a condition resembling drunkenness. This state continued about seven months, during which he took great care of himself; but on the 1st of February, 1819, he was attacked with apoplexy. He was immediately transferred to the Hôtel-Dieu, where he was bled in the arm. He recovered his consciousness after the blood-letting, but soon perceived that he had lost the use of his left arm. On the following day he returned to his home, where he continued to be treated for the paralysis of the arm. Forty leeches were applied at different times to the anus,[3] which, with certain other means, concurred in diminishing the paralysis, &c. But after that time he always had dazzling, vertigo, and tinnitus aurium; saw objects larger than natural, but dimly, &c. The intellectual functions became affected; the memory was impaired; and he experienced a sort of sluggishness in the execution of all the functions of the intellect. His nights were sometimes much agitated: when he slept, a kind of delirium supervened; his heart beat with force; the pulse became excited; the face red; the head hot, and he had palpitations and lancinating pains. He then rose—pursuing the phantoms around his chamber, in a kind of somnambulism, &c.[4]

CASE VI.

Palpitations—Confusion—Vertigo—Other symptoms of cerebral congestion.

A hosier, fifty years of age, who had been subject from his youth to cephalic congestions, and to palpitations of the heart, had been

[1] Ravier, De l'influence du cœur sur le cerveau, &c. Thèse, Paris, 1821.
[2] The French use this term for the first degree of vertigo.—*R. D.*
[3] See note, page 28.—*R. D.*
[4] Ravier, Op. citat.

incommoded for about two years by a reduplication in the intensity and force of the palpitations, produced by a state of hypertrophy of the left ventricle of the heart, and accompanied by giddiness. The blood was sent towards the brain with such violence that there was confusion of sight, and he could not walk in the streets without support; his heart beating at the time more strongly than common. In the month of March, 1823, when he entered the fourth dispensary, the pulsations of the heart had such an action on the encephalon, that, when he worked, the loom appeared to move from him, turn round, rise and fall, or to move in a cadenced manner.

When he was lying down, it seemed to him that he was balanced in the air; and if he walked without support, he believed every moment that he was about to fall. During the night, he was disturbed by dreams in which he believed himself involved in inextricable difficulties; but which, at other times, carried him back to the pleasant days of his youth, in the midst of the fields which had witnessed his birth, &c.

The greater part of these symptoms—which were, doubtless, the result of a morbid afflux of blood towards the brain—were immediately dissipated under the influence of a bleeding from the arm, and especially under that of cupping in the region of the heart.

CASE VII.

Symptoms of hypertrophy of the heart—Confusion—Vertigo—Threatenings of apoplexy.

Mr. A., aged fifty-nine years, of a sanguine temperament, strong constitution, and irascible and hasty temper—whose sanguineous system was much developed, especially in the face—had never been affected with any disease except distant attacks of gout in the feet, from which he had not suffered much.

On account of his state of health, he had been compelled to quit every kind of labour for fifteen months. This was the commencement of the derangement in his health.

The transpiration, which was very copious in his feet when he took the least exercise, had much diminished; soon afterwards, vertigo manifested itself, which recurred frequently, accompanied by violent headache, the seat of which was at the vertex; at the same time, the cerebral arteries beat with violence. He complained, moreover, of heat in the head, dazzling, and tinnitus aurium; and the injection of the capillary vessels of the face indicated cephalic congestion, and a threatening of apoplexy.

He had suffered, for some time, under palpitation; and when the heart was explored, beatings much more intense and superficial than natural struck the hand of the observer forcibly; the pulse was hard, full, and without frequency. He experienced a sense of constriction in the precordial region, and obstinate constipation. He frequently gave himself up to paroxysms of anger, or to the deepest melancholy.

Of all the means that were employed, bleeding was the most

advantageous. Sinapisms, blisters, the seton even, produced only excitement; and the same effect resulted from several mineral waters. Repeated bleedings, alternating with the application of leeches to the anus,[1] procured considerable relief; but he still felt, from time to time, swimming in the head and painful pulsations, which appeared to me to be owing to the impulsion of blood sent with violence by the hypertrophied left ventricle.

When M. Alibert and myself were consulted by this patient, we agreed that hypertrophy of the left ventricle was the chief cause of the symptoms; and we advised him to persist in the use of the preventive bleedings, to take exercise, and to diminish the quantity of his food. The patient is still living. His son exhibits some signs of a simultaneous lesion of the heart and brain.[2]

CASE VIII.

Symptoms of hypertrophy of the heart from infancy—Cerebral congestion—Threatenings of apoplexy—Hypertrophy of the left ventricle.

General Foy, so celebrated in our parliamentary annals, had received from nature a robust constitution. He was possessed of extreme sensibility and an irascible temper, which he knew how to control. From his infancy, he had been subject to palpitations of the heart, which had gone on increasing, when he addicted himself to the labours of the closet, in order to prepare himself for important contests from the Tribune. From the year 1817, being then only forty years old, he had been several times threatened with apoplexy, which disappeared, at length, under the influence of repeated bleedings prescribed by Dr. Gall. The illustrious general afterwards placed himself under the care of M. Broussais, who had known and attended him in Italy, and who was aware that his patient was full of blood, and laboured under hypertrophy of the heart, the presence of which was evinced by palpitation and vertigo. He prudently combined demulcents with digitalis, and a mild regimen composed of milk—a treatment which had transient success.

In 1823, General Foy had symptoms of nephritis and enteritis, for which leeches were successfully applied in the place of bloodletting, to which he had great repugnance. The hypertrophy of the heart appeared then to make fresh progress, and the force with which the pulsations of the heart were felt beneath the clavicle caused the physician to presume that the arch of the aorta might participate in the state of phlegmasia of the abdominal organs.

The general maintained his ordinary health for eighteen months; that is, with disposition to cough, to palpitations and cerebral congestions; the tongue was slightly red, and the stomach so sensible that he could not eat any slightly stimulating diet, without being incommoded with palpitations, gastralgia, &c.; but, after the session of 1825, he had vertigo to such an extent as almost to cause

[1] See note, page 28.—*R. D.*

[2] Derived from my correspondence with a physician of a provincial town.

him to fall in the street, but which did not recur, as was apprehended. During the autumn, the distinguished orator of the opposition traveled into the Pyrenees—a journey which, notwithstanding the regimen prescribed by M. Broussais, was the cause of emotions and vivid excitement. On his return from his travels, the disease of the heart augmented greatly; and the cerebral symptoms, thus far so formidable, proportionably diminished, and played but a very secondary part in the disease of which he died on the 28th of November, 1825, in the last stage of active aneurism with hypertrophy of the heart, and gastro-duodenitis.

On opening the body, four or five ounces of a bloody serous fluid was found effused into the chest; the pericardium also contained about two ounces. As for the heart, it was of extraordinary size; when measured across, it was five inches and three lines broad, and thirteen inches in circumference. From above to below —from the apex to the base of the right auricle—it measured seven inches, and its circumference was seventeen. The parietes of the left ventricle were eight lines thick, and those of the right only two lines. In the aorta was a quantity of small ulcerations—some superficial and others deep-seated—with laciniated edges, excavated perpendicularly in the substance of the parietes of the vessel.

The intestinal canal, and especially the stomach and duodenum, presented traces of inflammation and extenuation of the mucous membrane.

The head was not opened.[1]

It seems to us impossible to have the influence of hypertrophy of the left ventricle on the brain better depicted than in the course of the long disease of General Foy—a disease which had commenced in infancy, and for several years had threatened him with apoplexy; until, at length, the contractile force of the heart having lost its spring and its energy, the blood ceased to be driven to the brain with violence, and to produce the cerebral congestions to which the patient had been so often a prey.

Effusion of Blood into the Cerebral Substance.

CASE IX.

Excessive pain—Sense of suffocation—Infiltration of the lower limbs—Attack of apoplexy—Death—Effusion of blood into the right hemisphere—Hypertrophy of the left ventricle.

A woman, aged about fifty years, after having been unsuccessfully treated in several *maisons de santé* of Paris, was received into the Hôtel-Dieu, in May, 1816. Her pale appearance indicated suffering; for several months she had not slept; obliged to remain

[1] Extracted from the history of the last malady of General Foy, by M. Broussais.

day and night in the sitting posture, she experienced horrible anguish and pain of the epigastrium, which threatened her with suffocation. The pulsations of the heart could not be felt; the pulse was regular, feeble, and slow; the respiration loud and hurried. She had not a moment's rest, but cried out every instant from the violence of the pain; the lower limbs were swollen and infiltrated. Notwithstanding the absence of several symptoms characteristic of heart disease, its existence was suspected. Two blisters were applied to the thighs, to detract from the severity of the pain; at the same time, an antispasmodic mixture was given with tincture of digitalis, &c. Some days after her admission, it was observed with surprise, at the morning visit, that hemiplegia of the left side existed, and this affection had produced relief to her severe suffering. I had no doubt that she had had an attack of apoplexy in the night. She soon became indifferent to her condition, and more and more debilitated; the left arm swelled, and, what was remarkable, the pulsations of the heart were then felt distinctly; they were strong, hurried, and irregular; the face became infiltrated; the respiration more and more difficult; and she died about ten days after the appearance of the hemiplegia.

Necroscopy.—The heart was very large, and occupied almost the whole of the left cavity of the chest. The parietes of the aortic ventricle had acquired great thickness; the columnæ carneæ were of enormous dimension, and the auriculo-ventricular septum was equally hypertrophied. This increase was made at the expense of the right ventricle, whose cavity was reduced to almost nothing.

The brain presented, at the upper part of the right hemisphere, a small cavity, which contained a grayish *bouillie* mixed with blood; the cerebral substance in the vicinity of this effusion was softened and disorganised.

CASE X.

Sudden attack of apoplexy—Death—Hypertrophy of the left ventricle—Two apoplectic cavities in the right hemisphere.

A pavior, fifty years of age, fell down deprived of consciousness, and was taken to the Hôtel-Dieu two hours afterwards. On the 11th of April, 1816, he was in a comatose state; face pale, and pupil dilated; pulse full and slow; complete hemiplegia of the left side: (bleeding from the arm; mustard pediluvia). On the following day, bleeding in the foot; emetic tartar in a high dose. He partly recovered his intellectual faculties, but a febrile condition supervened, with dryness of the tongue and skin, &c. Death occurred on the 17th.

Necroscopy.—The right hemisphere of the brain contained a considerable cavity filled with blood, which occupied the middle lobe, and had no communication with the lateral ventricle: the corpus striatum of the same side had also a small yellowish cavity, which might have contained a hazelnut; it was lined by a mem-

branous expansion; the cerebral substance which formed the parietes of the cavity was yellow and softened. The traces of old effusion could not be mistaken.

The parietes of the left ventricle of the heart had acquired great thickness at the expense of the cavity. No obstacles were found at the cardiac orifices, and no traces of ossification.

CASE XI.

Aneurism of the heart—Attack of apoplexy—Death—Effusion of blood into the corpus striatum of the left side—Hypertrophy of the ventricle.

A woman, aged fifty-nine years, entered the infirmary of La Salpetrière, on the 26th of February, 1808, to be treated for aneurism of the heart, with which she had been afflicted for several years, but whose progress was very slow. Bleeding, pediluvia, and antispasmodics, sensibly diminished the difficulty of breathing, as well as the palpitations. She was getting ready to go out, when, on the 15th of March, in making efforts to go to the water-closet, she fell, deprived of consciousness, into a comatose state, with hemiplegia of the right side. Respiration was stertorous, and the pupils fixed; face red; pulse frequent and hard: (bleeding in the foot; a purgative glyster).

Necroscopy.—An extravasation of blood was found, which had commenced about the corpus striatum of the left side, and had extended into the four ventricles. The heart was very large, and the left ventricle, the cavity of which was greatly contracted, was nearly an inch and a half thick; the cardiac orifices were free, and there were some points of ossification upon the arch of the aorta.[1]

CASE XII.

Second sudden attack of apoplexy—Death—Two apoplectic cells in the left hemisphere of the brain—Hypertrophy of the left ventricle—Thinness of the parietes of the right ventricle.

A woman, aged fifty years, of small stature, was received into the Hôtel-Dieu in a state of insensibility and coma. The pulse was small and hard; hemiplegia of the right side. We learned that the woman had had a similar attack six weeks previously, from which she had recovered. She died the day after her admission into the hospital.

Necroscopy.—Two effusions of blood existed in the left hemisphere of the brain; the one appeared to be of longer standing than the other, and was also of less extent. A membrane began to be formed around a solid clot; whilst, in the other, the blood was still fluid. The heart was of considerable size in proportion to the stature of the individual; the parietes of the left ventricle were more than an inch thick, whilst the cavity would scarcely admit the extremity of the finger; the parietes of the right ventricle were much extenuated.

[1] Guillemin, Dissertations sur l'Apoplexie; 1818.

CASE XIII.

Third attack of apoplexy during the progress of disease of the heart—Cure.

A man, thirty-eight years old, who had laboured for four years under heart disease, was attacked with apoplexy, for which he was carried to the hospital La Charité, where he was treated for hemiplegia by the nux vomica. Five months after his exit from the hospital, he had a fresh attack of apoplexy, from which he pretty well recovered under the use of appropriate means, and he again left the hospital. Seven months afterwards he was admitted into the Hôtel-Dieu for aneurism of the heart, of which he had the most characteristic symptoms. Amongst other phenomena, the pulse was extremely irregular, and so slow that it beat 36 or 40 times a minute. I then lost sight of him. He probably would die of a fourth attack. I have known, however, a female affected with aneurism of the heart, with hypertrophy of the left ventricle, who had six successive attacks of apoplexy, which she survived.

CASE XIV.

Extravasation of blood at the base of the brain owing to rupture of the carotid artery—Death—Hypertrophy of the heart.

Delaulat, aged fifty-six years, had been liable to hemorrhage in his youth, and to headache in the adult age; much addicted to women and wine; he had been intoxicated, since the age of forty, two or three times a week, and after his drunken fit ended, vertigo existed to such a degree as to compel him frequently to quit work.

On the 28th of August, 1811, he was present at a dancing party, got drunk, and passed the night in the street. On the 30th, he again went to the tavern, where his wife found him lying on the floor; believing him to be intoxicated, she had him conveyed home, where he remained until the next day without any assistance. On the 31st of August, he was admitted at the Hôtel-Dieu with the following symptoms. Face red, and slightly tumefied; heat greater in the face than in the rest of the body; pulse strong, hard, full, and frequent; respiration very slow; profound coma, from which he could not be aroused by any excitation; mouth half open, without deviation of the lips, tongue, &c.; (sinapisms to the feet; leeches to the neck; veal water *emetised*[1]).

Death occurred at a quarter before four in the afternoon.

Necroscopy, twenty-three hours after death.—Face livid, ecchymosed; engorgement of the veins of the neck; injection of the venous canals. Black coagulated blood was found at the base of the brain; after cutting into the cerebral protuberance at its junction with the corpora olivaria and pyramidalia, with the handle of the scalpel I detached the blood, which formed a tolerably thick layer, and perceived a laceration in the internal carotid, at the point where, having reached between the anterior and middle lobe, it divides into the anterior and posterior branches.

[1] See note to page 10.—*R. D.*

This laceration was irregular; the outer coat overlapped it, whilst the inner was retracted. The tissue of the artery was thinner than in the healthy state, and its calibre more considerable. The blood which had escaped from the laceration had inundated the base of the brain, penetrated into the ventricles, and even into the vertebral canal for some inches in depth. The brain was injected but healthy; the lungs were gorged with blood; the left ventricle was much thickened.[1]

CASE XV.

Sense of heaviness in the head—Great mental distress—Apoplectic symptoms—Death—Aneurism and rupture of the basilary artery—Hypertrophy of the heart.

Espert, aged fifty-nine, copper-founder, of a very robust constitution, short neck, and very muscular, had been subject, for a long time, to a sense of weight in the head, which he was unable to describe. This was augmented when he made any great effort, walked rapidly, or drank more than common, which happened frequently. On the 4th of February, he was attacked with pneumonia, for which he was received into the Hospital La Pitié on the sixth of the same month. This disease terminated fortunately after two bleedings, and three applications of leeches over the seat of the pain. He was in full convalescence, and ready to leave the hospital, when he learned, on the 26th, of the death of a child whom he much loved. This news brought on fainting, which continued for some hours. In the evening, fever supervened; and on the next day, at my visit, I found him in the following condition. Face florid; tumefaction of the jugulars; respiration high, and a little painful on the right side, the old seat of the pneumonic pain; pulse hard, full, strong, and frequent; continual giddiness when erect, or in the sitting posture. This last symptom did not attract my attention much, as it had continued during the acute period of the first disease: (a copious bleeding.) In the evening somnolency.

On the 28th, permanent apoplectic state; respiration slow; pulse frequent, hard, and very strong, the artery vibrating; coma; involuntary movements; redness and tumefaction of the face. He died somewhat suddenly at one o'clock in the afternoon, without any change in his condition.

Necroscopy twenty-seven hours after death.—There was an enormous quantity of blood effused at the base of the encephalon; the brain having been separated from the medulla oblongata, and turned base upwards, the basilary artery was perceived to be aneurismatic above the cerebral protuberance (mesocephalon), and towards the confluence of the two branches which it furnishes. The aneurismal dilatation was an inch in diameter in every

[1] Serres, *Nouvelle division des apoplexies. Annuaire medico-chirurgicale des hôpitaux et hospices civils de Paris.* The cause of the brevity of the author on the subject of hypertrophy of the heart, is owing to its being then very little known.

direction, and the sac, when inflated, might be about the size of a hen's egg; its form was round, and slightly flattened at its upper surface, at the part which corresponds to the base of the brain; it was entirely empty, and had, at its outer side, a circular aperture with irregular edges, the diameter of which might be a line and a half; its parietes were extenuated, but uniformly so. The middle coat presented that cartilaginous condition which is so often observed in the arterial polygon at the base of the brain.

The blood which had escaped at this opening, was estimated at a pound; it had followed the layers of the meninges, and had passed with them into the ventricles, which it distended. The brain and cerebellum were healthy. The left ventricle of the heart was thickened.[1]

If it be difficult to admit that hypersarcosis of the heart alone caused the aneurism of the basilary artery, it is at least probable that it caused its rupture.

CASE XVI.

Profound coma—Hemiplegia of the right side—Death—Extravasation into the hemisphere of the brain—Hypertrophy of the left ventricle.

On the 2d of May, 1819, a woman was received into the Hôtel-Dieu, who died on the day of her admission. She was in a state of deep stupor; did not utter a word, and appeared devoid of sensibility over the whole of the right side; the pulse was small and frequent, and the respiration laborious.

Necroscopy.—Nothing remarkable was found at the surface of the meninges, or at the base, or in the ventricles of the brain; the cerebellum likewise appeared to be in a healthy state. We were about to leave the head and proceed to the chest, when one of the assistants laying hold of a scalpel plunged it into the middle part of the left hemisphere of the brain, and penetrated a cavity in the cerebral substance, which contained about a tablespoonful of black semi-fluid blood. This discovery perfectly accounted for the symptoms observed during life.

The pericardium contained scarcely any serous fluid; the heart, as large again as is usual, was firm and hard; the parietes of the left ventricle were more than an inch thick; the lungs and the abdominal organs presented no lesion.[2]

CASE XVII.

Sudden attack of apoplexy—Hemiplegia of the right side—Employment of nux vomica—Death—Extravasation of blood; and a cavity in the left hemisphere of the brain.

Jacob, a kitchen gardener, aged forty-five years, of a sanguine temperament and plethoric, was attacked with apoplexy, without

[1] If the author speaks so frequently of hypertrophy of the heart, and neglects to verify it during life, it is owing to but little attention being, at the time, paid to that kind of lesion.

[2] Ravier, De l'Influence du Cœur sur le Cerveau.

any known cause, on the first of January, 1819, after which he became hemiplegic.

He entered the Hôtel-Dieu on the 6th of January. The whole of the right side was absolutely insensible, and the loss of muscular contractility was complete. The tongue was also struck with paralysis, so that the patient experienced the greatest difficulty in making himself understood.

On his admission he was bled in the arm ; sinapisms were applied to the legs, and he was put upon the use of a *tisane*, composed of balm, arnica, and a few drops of acetate of ammonia, but without the least success. The bleeding was continued twice at intervals, owing to the pulse being too strong and full. Three months passed over without any great change in the situation of the patient, when he was put upon the use of the alcoholic extract of nux vomica. At first, a grain of that substance was given, which was gradually raised to ten ; this dose having produced violent twitchings, the remedy was discontinued, but resumed soon after, as it was observed that he could slightly move the paralysed limb. But, on the 24th of May, the dose of the medicine having been carried to six grains, the twitchings returned with as much force as before, and were succeeded by stupor, which soon became converted into complete coma. He died about ten o'clock at night.

Necroscopy forty-eight hours after death.—The meninges were infiltrated with serosity; the dura mater of the left side having been divided crucially, a yellowish, opaque fluid, of almost syrupy consistence, and manifestly purulent, was discharged. The part whence the pus seemed more particularly to flow was the middle and lower part of the left hemisphere, where, on removing the pia mater and the arachnoid, a cavity was discovered, the bottom of which communicated by a small aperture with the most hidden portion of the left ventricle, termed the *digital* or *encyroid cavity*.[1] The parietes of the cavity were lined by a kind of very thin membrane, and the fluid which the cavity contained was estimated at about two ounces, reckoning that which ran into the left ventricle. The right ventricle contained nearly a spoonful of yellowish fluid, but more transparent than the preceding. The heart, which was loaded with fat, was of twice the ordinary size ; the cavity of the left ventricle was so small that it would not admit the end of the little finger. The parietes of the same ventricle were extremely thickened. The right ventricle was slightly dilated. The lungs were perfectly healthy. The abdomen exhibited nothing unusual.

[1] Inferior cornu.—*R. D.*

Softening and Disorganisation of the Brain, with and without Effusion of Blood.

CASE XVIII.

Oppression of several years duration—Tumultuous pulsations of the heart—Loss of consciousness—Hemiplegia of the left side—Death—Disorganisation of the corpus striatum, with effusion of blood.

A female, 36 years of age, who had been subject for some years to a sense of oppression, and had often been affected with colds, enjoyed, notwithstanding, tolerably good health.

On the 3d of July, 1810, she was found deprived of consciousness, lying upon the floor, and paralysed in the left side. She was carried to the *Maison de Santé* of the Faubourg Saint-Martin. The countenance was livid and the respiration nearly natural; the pulse, hard, irregular, and tremulous; the heart beat tumultuously.

On the 4th, continuance of the hemiplegia: (a blister between the shoulders, julep, and decoction of the valerian root, with orange peel.)

On the 5th and 6th no change; gradual sinking: (sinapisms.)

On the 8th, she died at six in the evening.

Necroscopy.—Much blood in the vessels of the dura mater. Somewhat considerable infiltration of serous fluid between the arachnoid and pia mater of the upper surface of the brain. The whole encephalic mass was very soft; the right corpus striatum contained within it two coagula of blood of the size of a hazelnut, lodged separately in pouches of a regular round shape, the parietes of which were softened, and, as it were, suppurated for the thickness of several lines. The corpus striatum was altogether softer than that of the opposite side, and its vessels were greatly injected. The heart was large for the size of the individual; the right auricle was considerably dilated, and contained a polypiform concretion, with much black coagulated blood. The ventricle of the right side was greatly dilated, its parietes were thin, and, to the extent of almost a line in thickness, presented a kind of fatty degeneration. The left ventricle was dilated, and its parietes thickened.[1]

CASE XIX.

Apoplectic symptoms—Hemiplegia of the right side—Death—Extravasation into the left hemisphere—Cerebral substance softened, disorganised.

A woman, 65 years of age, was carried to the Hôtel-Dieu about the end of December, 1816. She had been found in her house, lying extended on the floor, and deprived of consciousness. She presented every sign of apoplexy—coma, insensibility, distortion of the mouth, stertorous respiration, and paralysis of the right side. We were informed, that eighteen years previously she had expe-

[1] Rochoux, Recherches sur l'Apoplexie, p. 9.

rienced a similar attack, which had likewise been followed by hemiplegia. She was bled in the arm, but without success. Death occurred in the course of the night.

Necroscopy.—The brain having been exposed, and dissected, a considerable extravasation of blood was discovered in the middle lobe of the left hemisphere. A little more externally there was a portion of the cerebral substance softened, disorganised, and of a yellowish colour, surrounded by a tolerably thick layer infiltrated with blood. The heart was not very voluminous, but the cavity of the left ventricle had almost disappeared, on account of the thickening of its parietes, the texture of which was, moreover, dense and compact. The right ventricle was oppositely situated.

CASE XX.

Aneurism of the heart—Attack of apoplexy—Hemiplegia of the right side—Death—Effusion of blood into the left hemisphere—Disorganisation of the cerebral substance near the cavity—Hypertrophy of the heart.

A woman, aged 59 years, was admitted into the Hôtel-Dieu on the 5th of July, 1816, with all the symptoms of active aneurism of the heart; face livid; lips violet coloured; respiration loud and hurried; pulse hard and irregular; sensation of hot vapour about the head; anxiety; insomnia; strong and irregular pulsations of the heart, &c. Digitalis was administered, which was carried gradually to a considerable dose with apparent success. The patient was tranquil and relieved; but a few days afterwards she was struck with apoplexy in the night, and the following day, at my visit, we found her paralysed in the right side, with distortion of the mouth, and difficulty of speech. The symptoms of disease of the heart experienced, at this time, a sensible diminution. The hemiplegia was subsequently combated by nux vomica, with some hopes of success; but motion was only imperfectly restored, to cease again afterwards. The symptoms of disease of the heart recurred with greater intensity, and the patient, enfeebled by two diseases at once, gradually lost ground, and died at the end of November.

Necroscopy.—In the left hemisphere an effusion was found, which occupied the optic thalamus, and had penetrated from thence into the lateral ventricle. The cavity which contained the effused blood was covered internally by a layer of yellowish purulent matter, which had penetrated with the blood into the ventricle by the opening in question. The cerebral substance in the vicinity of the effusion was greatly altered over a certain space. The heart was very large; the parietes of the left ventricle were very thick, and the columnæ carneæ had acquired considerable thickness, whilst those of the right ventricle were by no means distinct.

CASE XXI.

Suppression of the menses—Palpitation—Hemiplegia—Death—Disorganisation of the right hemisphere—Hypertrophy of the left ventricle.

A seamstress, aged 24 years, of feeble constitution, had suppression of the catamenia at twenty years of age, which caused palpitation, occasional fainting, and constant cough. These symptoms were quieted, and menstruation was restored. Two years afterwards, fresh suppression; great mental distress; work became a task; increase of the palpitation, syncope, hemiplegia, &c. When transferred to the *Clinique* of La Charité on the 11th of April, 1802, her health was greatly decayed. Face pale; breath fetid; respiration high and frequent; slight pain in the right side; pulsation of the heart very extensive, tumultuous, and perceptible to the sight; complete hemiplegia with infiltration; pulse small, frequent, and feeble in the paralysed side, but more developed, somewhat strong, even, in the right side. The patient lived five days in the hospital, dreadfully tormented by a sense of suffocation, which recurred every instant. She remained constantly lying on the paralysed side. Death occurred on the 16th of April, after a long and painful agony.

Necroscopy.—The left hemisphere of the brain was found in a state of manifest decomposition; its colour was ashy gray, and its consistence that of a thick *bouillie;* the left lung was crowded towards the top of the chest, and reduced to half its natural size. The heart occupied the greater part of the left side of the chest; the pericardium contained a little serous fluid. The heart had acquired an extraordinary size, in proportion to the stature. The right cavities of the organ, and the left auricle, which was a little distended, presented no traces of any other lesion. The left ventricular orifice was ample, but on the mitral valves were observed vegetations, analogous to those produced by syphilitic disease; the middle part of the free edge of this valve was tipped with a tubercle of the size of a hazelnut, implanted on the valve. The cavity of the left ventricle had acquired a considerable size; the fleshy parietes were much thicker than in the natural state.[1]

It cannot be doubted, that in this case the hemiplegia had resulted from an attack of apoplexy at the time of the admission of the patient into the hospital. The primary cause of the organic lesion met with in the brain, must be referred to the extravasation of blood.

CASE XXII.

Third attack of apoplexy, preceded by palpitations—Hemiplegia of the right side—Death—Effusion of blood into the left hemisphere of the brain, with disorganisation of the cerebral substance—Hypertrophy of the left ventricle.

In 1827, I was called to see Madame * * *, who was in the fourth day of an attack of apoplexy. I found her in the following state:—

[1] Corvisart, Essai sur les Maladies du Cœur, p. 74.

paralysis of the upper and lower extremity of the right side, with stiffness of the joints; general sensibility obtuse, especially in the upper extremities; sight of the left eye very weak; complete blindness of the right. She was speechless, and did not appear to recognise any one. The mouth was distorted on the left side; the pupils were dilated and immovable; the eyes fixed; haggard; the tongue turned to the right; the mouth full of bloody mucus; deglutition executed with difficulty. She was in a state of complete stupor; the respiration slow and stertorous: the pulse slow, full, and strong; the pulsations of the heart so much developed that they could be perceived with the naked eye; they were tumultuous; the abdomen was tense, but without pain; the urine and fæces were discharged involuntarily.

Venesection in the arm furnished but little blood, on account of the difficulty with which it flowed; derivatives—such as emetic tartar, a blister, and a purgative clyster—produced no advantageous effect. Delirium supervened, with grinding of the teeth, the stupor changed into coma, and she died in the evening.

The information which I obtained indicated that she was 42 years of age, that she had laboured under palpitation of the heart for many years; that her catamenia had been suppressed for three years, after the loss of her fortune; and that in the interval she had experienced two attacks of apoplexy, which had on each occasion left hemiplegia of the right side.

Necroscopy.—The head was large, and the structure of the body athletic. An incision into the integuments caused the discharge of a large quantity of black, diffluent blood. The meninges were greatly injected; there was a small quantity of blood infiltrated between the arachnoid coat and the pia mater, paticularly of the left side. The cerebral convolutions were much flattened, and the cerebral substance of a rosy hue. About four ounces of black, concrete blood were found extravasated in the centre of the left hemisphere. The cavity which contained this clot would easily have admitted a hen's egg. Its parietes were torn, and reddened by the contact of blood; the softening and disorganisation of the cerebral substance extended three or four lines in depth. In the part thus disorganised there was a multitude of small points of blood. In front of the hippocampus minor, (*Ergot de Morand,*) a laceration was observed, by which the blood of the cavity escaped into the left ventricle; the right contained none; its parietes, which were almost wholly dried, seemed to have sunk down upon each other.

The heart was at least double its ordinary size. The parietes of the left ventricle were nearly two inches thick; the columnæ carneæ had acquired considerable size, as well as the septum of the ventricles. The right ventricle was dilated, and its parietes a little thicker than in the healthy state; the auricles exhibited nothing particular, and the same may be said of the cardiac apertures and the valves, if we except a few points of ossification on the floating margins of the sigmoid valves of the aorta. The lungs were the

seat of decided congestion. The mucous membrane of the stomach was nearly uniformly red.[1]

Conclusions and general remarks.—If, pursuing the natural inclination of the physiological physician, who investigates the probable cause of the morbid phenomena which he observes, we seek to discover that of the encephalic lesions noticed after hypertrophy of the heart, we shall probably find it altogether in the action of the left ventricle, augmented in thickness, force, and size. The ventricle under such circumstances sends the blood with so much violence to the brain, that its vessels are ruptured and its delicate substance torn; whence occur cerebral congestion, effusion of blood, and, of consequence, organic degeneration; of which we have related cases. We repeat—without pretending to calculate the force of the heart, or to establish the scale and limits of its contractile power—we see in it a dynamic and mechanical operation, a power set in action by the laws of life. The agent of this power is the column of fluid, which, not meeting with a resistance equal to the impulsion communicated to it by the heart, tends to escape from the canals that contain it. By adopting a material comparison to explain in what manner we conceive this physiological and pathological phenomenon to be accomplished, we do not pretend to assimilate the mechanism of the organic functions rigorously to the laws of physics, although all the experiments cited above go to the support of the comparison which we make here. We may add, as a still more decisive proof, drawn from analogy, that if we send a hot injection with great force into the dead subject, we produce artificial effusions into the parts of the brain that receive the greatest number of vessels.[2] M. Serres, in the work already quoted, also remarks, that by forcing fine injections into the carotids, they enter the apoplectic cells, and in some measure simulate extravasation: (page 276.)

It has been imagined, that this coincidence between diseases of the heart and those of the brain might be sometimes explained by embarrassment of the circulation, caused by ossification of the valves of the heart, or of the arterial trunks. At other times, the existence of an aneurismal state of the cerebral vessels has been supposed, which predisposes them to be ruptured by the least effort of the blood. I have not observed any ossification in the cases which I have examined, and I know not of any cases of it reported by authors. But, admitting the existence of such ossifications, I do not well comprehend how they could present to the returning venous blood an obstacle capable of producing an effusion by reflux or *regorgement*. This is doubtless far from being the result of such a cause as the violent contraction of a muscle so strong as the heart, whose thickness and contractile power are

[1] Extract from the Memoir of M. F. T. Larroque, deposited in the Archives of the *Académie Royale de Médecine;* cited above.

[2] See my Mémoire sur l'apoplexie, in Journal Complémentaire des Sciences Médicales. Tom. i.

evidently doubled. As for aneurismal dilatations, we can well conceive that they might singularly predispose to effusion. We have, indeed, related a case of the kind, borrowed from M. Serres. If we examine the most simple phenomena of the circulation, observed on ourselves, we may see that in consequence of vivid emotion, the heart beating with force, the pulsation of the blood in the brain may be distinctly felt, and seems to produce the effect of painful percussion on a sensible organ. Let us then suppose the contractile force of the heart to be doubled; and in place of a painful impulsion there will be a still more violent effort; and, consequently, perhaps a dilatation and rupture of the small vessels of the brain. This is exactly the apoplectic stroke. We have many times seen, in the corpus striatum and in its vicinity, the small vessels manifestly distended and ruptured; and particularly with M. Leperrey, formerly *interne* at the Hôtel-Dieu, whom a premature death has removed from the profession; we have seen, we say, a multitude of small vessels, dilated and ruptured, disseminated over the inferior paries of the ventricle. The pathological state of these vessels had been the source of a violent (*foudroyante*) cerebral hemorrhage, which had carried off the patient. We have related (case the 14th) an instance of rupture of another kind, extracted from the memoir of M. Serres.

Were we to regard only the surfaces of things, the facts, which we have related, would establish, at first aspect, rather a coincidence than a rigid subordination, and a kind of hierarchy [?] between two kinds of diseases (hypertrophy of the heart and apoplexy); and we should be right, to a certain point, in asking for a demonstration of this topic of doctrine, which, as M. Larroque remarks, in the memoir quoted above, has been a subject of dissidence amongst physicians. There are two methods of dispelling the doubts that have arisen on this matter; the first consists in indicating, with precision, the nature, seat, and conditions, of the force of impulsion of the central organ of the circulation; the second springs naturally from the analysis of observed facts. In the former case, if the hypertrophy exists any where than in the left ventricle, which sends the blood directly into the aorta, and then into the carotids; or if there be any obstacle to the exit of the blood, sent out by the hypertrophied ventricle, the cerebral congestion does not take place, or at least it is slight and imperfect. In the second case, it is impossible to deny the influence of the heart on the brain, when the exposition of symptoms has shown that the signs of hypertrophy have long preceded those of cerebral congestion, as is seen in the relation of the case of General Foy, for example. On this point we are, we think, justified in remarking, that in the greater part of well-constituted individuals, diseases rather tend to exclude each other when they are coincident, unless there is subordination of morbid effects, as in the subject that occupies us, or unless the disease is propagated by continuity of tissue. We may readily conceive, for instance, that a person who labours under pleurisy, may be affected almost simultaneously with pneumonia;

but there would be great reason for the presumption, that he would not have an attack of apoplexy whilst the lung was a centre of fluxion. If, therefore, this *simultaneity* is observed in the course of active aneurism of the heart, it is by virtue of a peculiar mechanism, or rather of an etiology, in which the disease itself becomes the cause of other morbid disorders.

Amongst the facts which we have related, some are imperfect and somewhat inconclusive as to the succession of symptoms; but in all (the living excepted) the coincidence between the hypertrophy of the ventricle and the cerebral affection existed; and in the very great majority of the sick, tinnitus aurium, vertigo, *coups de sang*, and hemiplegia, left no doubt as to the presence of cerebral congestion. In none of those who died was there any obstacle to the impulsion of the blood towards the brain. On the other hand, the almost constant diminution of the cavity of the ventricle is a condition that singularly favours the progress and velocity of the blood towards the encephalon. We have almost always neglected to point out the external conditions of the constitution called *apoplectic*, inasmuch as this complex peculiarity of organisation is most commonly secondary, and a multitude of persons die of apoplexy, without presenting any of the traits of such constitution; perhaps, however, we ought to except extreme shortness of the neck, which indicates a corresponding approximation between the heart and the brain, and, therefore, a much less space to be passed over, whence results a greater power of distension on the part of the blood sent forth by the central organ of the circulation.

To reply to objections which have been made, on greater or less foundation, we may say, that as regards the congestion and exhalation of blood from the meninges, &c., which are mentioned in many of the cases reported by authors as the effect of hypertrophy of the heart, it must be admitted that they may have depended upon some other cause—topical or remote; and that this cause might, in certain circumstances, complicate the pathological condition of the heart, without being in any manner under its dependency. There is, in truth, nothing absolute in physic; and sad experience shows that almost every thing may be contested by tenacious and quarrelsome spirits: in the art of observing and analysing facts, there ought to be a rectitude and good faith, which should put a bridle on the mania for disputation. When several causes are found in operation in a complex case of pathological physiology, preference should be given to the most material and the most evident.

Although we have divided the cases reported above into three series, in one of which is comprised apoplexy, properly so called, it must not be inferred that we wish to restrict the term to those extravasations into the encephalon that are collected in a cavity (*en foyer*). Far from it; we are satisfied, as M. Serres has well established, in the memoir already quoted, that this pathological condition may be caused by engorgement of the meninges, and of the capillaries of the brain; the cerebral substance is then very dense and consistent, and when it is sliced away, we perceive here

and there a multitude of small vessels distended with blood, from which minute drops often escape. This state is almost always accompanied by more or less effusion of a reddish serous fluid, either into the ventricles, or at the base of the brain.

We may remark, *en passant*, that if every idea contained in the memoir of M. Serres be not received without dispute, and that if the system, which he adopts relative to apoplexy, have the inconvenience of confounding different diseases of the brain and its membranes—at the present day considered distinct—we cannot refuse that learned anatomist, physician, and zoologist, the merit of profound views, of remarks full of sense and ingenuity, with which he has dexterously combined many rare cases and experiments of his own. In several of these cases and experiments, the effusion often produced no apoplectic symptoms, properly so called; in others, on the contrary, the symptoms were well marked, although there was no effusion into a cavity (*en foyer*), or results which led the author to infer that the effusion or extravasation was the consequence and not the cause of the apoplexy, &c.

To have well established a point of doctrine in medicine, is almost to have demonstrated its utility; and it would be very easy for us to make the application of that which occupies us. If a man were to present himself to your observation, with a plethoric constitution, strong and extensive pulsations of the heart, which raised the stethoscope against the ear, with a hard pulse, &c., you might conclude that this man was affected with hypertrophy of the heart; and you might think that he ran but little risk, on account of that pathological state, inasmuch as a person may live long with hypertrophy of that organ. But if you made a more extensive application of your knowledge on this matter, by supporting yourself on facts, you might apprehend that your patient might be struck with a *coup de sang*, or with apoplexy, long before the ordinary term of the disease of the heart. This datum will teach you to meet and prevent cerebral congestions which threaten existence, as in several of the cases which we have related. That of General Foy is especially of such a character as to strike the attention. Who will say that the career of this illustrious orator might not have been prolonged, if, instead of having been foolishly purged under false and hypothetical indications, consideration had been paid to the hypertrophy of the heart, as M. Broussais had done in Italy long before, and had bled him largely.[1] M. A., whose case is related before, would doubtless have died from some *coup de sang*, if, according to the advice given him, the augmented action of the central organ of the circulation on the brain had not been combated by the same means. The utility of the practice is farther shown in the follow-

[1] M. Bricheteau, in detailing Genearl Foy's case (p. 60), has omitted to mention this supposed error, which he castigates more warmly, perhaps, than is consistent with strict professional etiquette. The professional adviser, at the time, had doubtless, as he conceived, ample reason for the course he pursued.—*R. D.*

ing case, reported by M. Larroque, in the memoir previously cited.

A wine merchant, aged 50 years, formerly a soldier, of a sanguine temperament, strong constitution, and apparently enjoying excellent health, had been affected for several years with violent palpitation of the heart. Two years ago (after great mental distress) headache, sense of suffocation, syncope, tinnitus aurium, sparks before the eyes, &c., were joined with the palpitation.

Under the least contrariety, all these symptoms increased, and a true apoplexy succeeded, which yielded promptly to copious bleeding at the arm. This condition has been frequently repeated, and hitherto has always yielded to the same means. He experiences constant pain in the region of the heart; and, when the organ is explored by the stethoscope, it presents the following signs: the pulsations are heard in extraordinary force over almost the whole of the left side of the chest, and when the instrument is applied over the region of the heart, it is forcibly repelled against the ear; these pulsations are regular, as well as those of the wrist. It is very evident, adds the author, that the patient is labouring under hypertrophy of the heart, on which all the apoplectic symptoms are dependent. Blood-letting has succeeded in preventing the development of mortal symptoms; so far, there has only been cerebral congestion; or, if effusion has existed, it has been but slight. It is also nearly certain, that he will ultimately die of apoplexy with extravasation, caused by the excessive force with which the heart sends the blood to the brain (case 7, page 59).

From the preceding facts and considerations, the following propositions may be deduced.

I. The energy with which the heart, more or less in proximity to the head, sends its blood to the brain, in a state of health, as well as of disease, exerts an influence on the character and extent of the cerebral function, and even of the instinctive and intellectual faculties.

II. Hypertrophy of the left ventricle of the heart may produce cerebral congestion, *coup de sang*, and attacks of apoplexy, by the simple abnormal impulsion which it communicates to the blood; and this effect is far from being uncommon.

III. The too strong impulsion of blood in the encephalon may cause laceration of the cerebral pulp, and dilatation and rupture of vessels in those parts of the brain that receive most of them; such rupture being prompt and easy when those vessels are affected with aneurism.

IV. The essential condition—we may say, the *sine qua non*—of cerebral congestion or effusion in consequence of hypertrophy of the heart, is the absence of every obstacle to the course of the blood between the left ventricle and the encephalon; such would be, for example, ossification of the sigmoid valves of the aorta; contraction of the orifice of that artery; ossification of the arteriolæ; &c.

V. Another condition, which favours and accelerates the impulsion and congestion of blood towards the head, and must hasten

their consequences, is contraction of the hypertrophied ventricle. Dilatation produces a contrary effect by augmenting the size of the heart, and enfeebling its contractile power.

VI. The knowledge of the influence of hypertrophy of the heart, on the development of cerebral congestions and apoplexies, is of direct utility in the practice of the art, as it indicates certainly the means of preventing and of combating those diseases, and often of preventing their return.

SECTION II.

On the influence of lesions of the lung on dilatations of the heart—Of that exerted by hypertrophy of the right ventricle on the pulmonary circulation, and on hemorrhages of the lungs.

It is but necessary to cast a glance at the anatomical structure of the chest, and to bear in mind the connections of the viscera within it, to conceive what disorder must arise from an increase in the size of the heart, from its tumultuous movements, and from the doubled or tripled energy of action of its parietes—a disorder which must especially arise, when a state of phlegmasia or of accidental adhesions cramps its movements, or an effusion into the cavity of the pericardium, or of the thorax, contracts still more the narrow space in which that viscus is always compelled to move. Thus, we often remark that simple hypertrophies of the heart produce great difficulty in breathing, pulmonary hemorrhage, &c., even when the lungs are sound; whilst, on the other hand, tuberculous affections of the lungs produce palpitations and great disorder in the movements of the heart, before even the first symptoms of phthisis have manifested themselves. The pulsations of that organ are, at times, so marked, and so strongly communicated to the ear by an inflamed and compact lung, that, at first, it might be believed the patient —affected with pneumonia or pulmonary tubercles—had a disease of the heart. This error has been committed a number of times.

What we have just said is, then, of a nature to demonstrate, that, in the chest at least, the reciprocal action which the neighbouring organs exert on each other through the circulation, by compression or simply by locomotion, is worthy of some attention, and may give rise, in the abnormal state, to very serious symptoms. It is almost the same with the abdominal cavity, although the extension of its parietes greatly augments its dimensions: thus, when the liver and the spleen have acquired a considerable morbid development, they repress the functions of the stomach, either by invading the space allotted to it in its greatest development, or by compressing the vessels that pass to it.

When the uterus and the ovaries have acquired a large size, and an unnatural weight, they displace other abdominal viscera, and compress the bladder, the rectum, and the large iliac vessels, so as to cause disturbances in digestion, constipation, incontinence of urine, and tumefactions in the lower extremities.

The action of similar causes, however trivial they may appear,

explains a multitude of pathological phenomena in a more satisfactory manner than the ingenious concourse of vital actions of metastases, or vague and obscure sympathies. It is principally into the theory of diseases of the heart that this last form of subtle explanations has been made to enter. For instance, it is constantly said, that such a person having been unfortunate, and subjected to severe and long-protracted distress, felt his heart beat stronger than usual; that, in consequence of the influence of the *moral* on the *physique*, and when under the empire of distressing passions, the circulation becomes disturbed and retarded; the cardiac cavities dilate and become aneurismatic, &c. We thus limit ourselves to a vague reminiscence—founded solely on the sympathy of distant organs—without regard being paid to the material influence of neighbouring organs, which are in a direct and reciprocal commerce with each other. Is it not more probable, for example, that the obstacle presented by disease of the lung to the progress of the blood sent by the right ventricle into the pulmonary artery, may be a more frequent cause of dilatation of the ventricle, and one far more easy of comprehension, than a mental affection necessarily proceeding from the brain, or than the retrocession of a gouty or psoric affection? On the same day that I reasoned in this simple manner, I ran over the work of Corvisart, and was astonished to discover that the majority of the patients attacked with aneurism had previously suffered under pulmonary catarrh, and other affections of the tissue of the respiratory organs. It is presumable that, in the majority of these cases, the obstacle which a physical lesion of the lungs throws in the way of the pulmonary circulation, gradually occasions dilatation of the cavities of the right side, and this by a mechanism very readily conceivable, and which has the greatest analogy to the action of ossified valves, or of any other cause that prevents the ventricles of the heart from being wholly emptied before a fresh quantity of blood flows into them. Several authors have pointed out this cause of dilatation of the heart, without attaching to it the same importance as we, and without ranging it amongst the causes of aneurism. It had not escaped Senac.[1] Morgagni likewise cites some cases where dilatation seemed to him to be produced in a similar manner,[2] after pleurisy and pneumonia; and he adds, that the channels for the blood through the inflamed lungs being contracted, that fluid, by distending or irritating to excess the heart and its vessels, does violence to the parietes of the former, and to the intimate substance of the latter; and although, says he, the distension ought to be greater in the right cavities, because there is in the lungs an obstacle to the evacuation of those cavities, the veins must also be necessarily distended in the intimate substance of the left cavities, because the blood with which the right cavities are filled to excess is opposed to that which has also to return from the left side by the coronary vein.

After some other remarks on the greater or less force of resist-

[1] Traité du Cœur, liv. iv. chap. 8, No. 3.

[2] Epist. 21, No. 34.

ance of the parietes of the heart, that illustrious pathologist sums up by affirming, that there is nothing in the least astonishing in our finding sometimes, after severe or reiterated attacks of inflammation of the lungs, a dilatation either of the whole heart or of some of its parts, but especially of the right side.

M. Bégin, in an article in the *Journal Complémentaire des Sciènces Médicales*, entitled "*Physiological and Pathological Reflections on Asthma*,"[1] has developed some considerations which belong to the subject we are now examining, and which we cite with pleasure.

"In order that the lung shall properly fulfil its functions, it must afford a ready and free passage to the blood. If the development of this organ be constantly cramped by any cause, the blood accumulating in the right cavities of the heart will surcharge them, and their fleshy parietes, redoubling their efforts to drive out the fluid, will become the seat of organic changes, *which will be owing* to the pathological condition of the lung. It is by this mechanism, that the constant exercise of the voice by resounding, or by hurrying beyond measure the movements of the thorax; that hard labour, by compelling the incessant exertion of great muscular force; that partial hepatisation of the lungs, by rendering a portion of their parenchyma impermeable; that chronic pleurisy, by giving occasion to a serous collection which compresses the organ;—it is, I say, by this mechanism that every act and every disease, which presents an obstacle to the course of the blood through the lungs, frequently occasions organic disease of the heart. If, now, we suppose the organs of respiration to remain for five, fifteen, or thirty years in the state of horrible constraint that characterises attacks of asthma, it will be easy to understand how this affection (seated in the lung) may give rise to the same lesions."

If any obstacle to the course of the blood through the lungs can cause that fluid to reflow into the right ventricle of the heart, and be an active cause of its dilatation—as we have established most clearly—it is no less certain, that excessive action of the hypertrophied ventricle may, by an inverse mechanism, drive the blood out of the ordinary channels of the circulation, and give place to sense of suffocation, pulmonary congestions, hæmoptysis, &c. This point of pathological anatomy and physiology is not only elucidative of the theory of spitting of blood, but must be esteemed one of the bases for the therapeutics of diseases of the heart and lungs. M. Barbier has, indeed, founded an ingenious indication of materia medica upon the state of hypertrophy of the central organ of the circulation.

Before proceeding farther, we may remark, *en passant*, that this point of organic medicine has the most intimate connection with that which forms the subject of the preceding section, the object of which is to show the influence of hypertrophy of the left

[1] Tom. v. p. 6.

ventricle upon cerebral congestions and extravasations of blood in the brain. There is, however, a difference in anatomical structure and position between the aorta and the pulmonary artery, which must occasion some little variation in the pathological phenomena. Thus, the curvature of the aorta at the arch diminishes the impulse of the blood, and is the cause of a shock, which accounts for the frequent aneurismal dilatations at that part of the vessel; in consequence of this anatomical arrangement, the column of blood must arrive less rapidly at the brain, which is besides much more distant from the centre of impulsion than the lung. The pulmonary artery, which is short and but little tortuous, resembles it in no respect as to its direction, and its normal force is in a ratio with the space through which it has to send the blood contained within it, and with the obstacles which it has to surmount.

The influence of hypertrophy of the right ventricle on the lungs, says M. Tixier, formerly *interne* of the hospital,[1] is, according to my experience, much greater than that of the left ventricle on the cerebral circulation. The blood, to arrive at the brain, has a long and tortuous course to run; the multiplicity of vessels that convey the blood to that viscus, the great curvatures, the successive divisions of those vessels, the change produced on the sigmoid valves in certain diseases, diminish the impulsion of the blood; the arteries, when they reach the base of the brain, anastomose with each other; . . the branches that arise from this central point produce other branches, and these again smaller ramifications, whose interlacing constitutes the pia mater before entering the encephalon. If we enquire—adds the author, farther on—what is the force of the aortic ventricle in the healthy state, and admit, with M. Poiseulle,[2] that the total static force, which moves the blood in an artery, is exactly in a direct ratio with the area of the circle of the artery, or in a direct ratio of the square of its diameter, it necessarily follows, that, the minute arteries which penetrate the cerebral pulp being infinitely small, the action of the heart must be almost at its minimum, &c. It must be remarked, however, that Bichat has properly observed, that the parietes of the vessels, when they have attained the interior of the brain, lose somewhat of their thickness and resistance, which must increase the effects of the impulsive force of the left ventricle.

The contractile force of the right ventricle, whatever may be its true measure, appears to us, then, very great, relative to the short space over which it has to send the blood; consequently it seems certain, that, when this force is augmented by a state of hypertrophy, it may readily cause rupture in the last vascular divisions, and so produce hemorrhage. A long time ago, we instituted several experiments which demonstrate how little force is needed

[1] Considérations sur l'hémoptysie symptomatique de l'hypertrophie du ventricale droit. Thèse, 1834 (Paris).

[2] Thèse inaugurale.

in a column of fluid to occasion the ruptures of which we are speaking: simple injections made into the pulmonary artery, with an ordinary injecting syringe, produced extravasation of the matter of the injection into the parenchyma of the lungs, when there was no communication between the capillary blood-vessels and the cells of the lungs. A pupil of the Hospital Necker (M. Leroi) has repeated this experiment, and obtained the same results. M. Texier, referred to above, who unhesitatingly admits that hæmoptysis produced by hypertrophy of the right ventricle must operate in the same manner (by rupture or fissure of the extremities of the vessels), has also made experiments, with the view of rendering this theoretical topic more demonstrative. We were desirous, says he, of ascertaining if we could imitate mechanically the action of the right ventricle on the blood which traverses the pulmonary artery. We made some experiments on human lungs, which were chosen sound, without apparent disease at least; and the following were the results. We endeavoured to cause the matter of the injection, which consisted of spirit varnish, coloured red by vermillion, to pass into the pulmonary veins; in this we succeeded, and without any great degree of pressure. We endeavoured, by means of a lens, to detect whether the fluid had entered the ultimate bronchial ramifications, but could perceive no trace of it. We then varied the experiment, by tying the pulmonary veins; and succeeded, by a greater degree of pressure, in forcing the injection not only into the veins, but also into the bronchial tubes. How can this communication be explained, except by admitting a laceration of the very thin septa which separate the vessels from the air cells? The author repeated those experiments on the lungs of children several days and several months old. He subsequently endeavoured to produce in the lung an artificial apoplexy, with the matter of ordinary injection coloured red. After having tied the bronchi and the pulmonary veins as near as possible to the lung, he sent the injection in with force, and did not dissect the lungs till ten hours afterwards. He then found, in the interior of those viscera, red, circumscribed, hard *nuclei* (*noyaux*), formed by the injected matter, which had evidently torn the pulmonary parenchyma. These results are strikingly identical with those which we obtained.

From the anatomical and physiological considerations into which we have just entered, it can readily be discerned what must be the influence exerted by the right ventricle of the heart on the lungs, and on the function of respiration, when it has acquired a very large size, or is affected with hypertrophy, which has doubled or tripled its force and contractile energy.

Persons labouring under this hypertrophy, with or without dilatation, have commonly palpitations, often caused, from the commencement, by an obstacle in the lung; the pulsations of their hearts are stronger and more marked on the right than on the left side; the pulse is frequent, without any great (*trop*) irregularity. The face and lips are blue or livid, at times at least; the jugular

veins are constantly gorged with blood, and the seat of a pulsatory reflux, which has been termed the "venous pulse;" the movement of the hypertrophied or dilated auricle seems to ascend, and, in many cases, its systole and diastole can be distinguished above the clavicle, in the interval between the two scaleni muscles. The respiration is short and difficult, and when there is, at the same time, an obstacle to the circulation and to hæmatosis, the blood passes into the pulmonary veins with difficulty and in less quantity, is insufficiently oxygenised, and excites the brain imperfectly; whence, in serious cases, stupor, torpor, and signs of asphyxia to a greater or less amount, of which they frequently die who are affected with aneurism of the right ventricle. We may add to these, towards the end of life, signs of œdema and infiltration, more common and more marked than in hypertrophy and aneurism of the left cavities.

I had very frequently been struck with the fact that persons who spit blood frequently have, at the same time, palpitations of the heart. According to my custom, without any assistance from reading, I endeavored to establish a coincidence and subordination between these two phenomena, when I was called to see a leather-dresser, in Rue Mouffetard, who had suffered for several years with serious hæmoptysis. This man, who was of a vigorous constitution, had no symptom of phthisis pulmonalis, but he was incommoded by palpitations, which never failed to be doubled in violence at the time of the spitting of blood; these were much stronger on the right than on the left side, and it became evident to several physicians—amongst whom was my friend M. Rayer, physician to La Charité (at that time my colleague in the fourth dispensary)—that the patient was labouring under active aneurism with hypertrophy of the right ventricle; and to this hypertrophy we referred, by common consent, the frequent attacks of hæmoptysis, which were not attended with the symptoms proper to organic lesions of the left ventricle, as vertigo, hardness and irregularity of pulse, coldness of the extremities, unequal distribution of the blood, &c. Some other similar cases which occurred to me, and in which I had no opportunity for verifying the diagnosis by dissection, involved me in so much uncertainty that I determined on investigating the subject. I first referred to Morgagni, as to a fruitful mine scarcely ever explored in vain. I found, in his seventeenth letter, two facts which commenced the demonstration of the inductions at which I had already arrived. In the first, he speaks of a mendicant, aged sixty-five years, affected for several years with a disease of the heart, which is imperfectly described, who was brought to the hospital, where he repeatedly spat blood mixed with mucus—sputa which the author compared to gelatine. He died about the fortieth day after his admission. On opening the body—which was done in presence of Albertini—a pound and a half of serous fluid was found in the pericardium, and the heart was equal in size to that of an ox. The cavity of the right ventricle had its ordinary capacity, but its parietes were very thick. The cavity of the left ventricle, on the

contrary, was so large that it could have contained within it another heart of the ordinary size.[1]

The second case occurred to a mattrass-maker, fifty years old, whose respiration was constantly difficult. This man was sometimes taken with oppression in the præcordial region, and constrained respiration, which were followed, from time to time, by acute pain in the loins; the arteries of the neck beat forcibly, and, for some days before death, there was spitting of blood.

On opening the body, an effusion of bloody fluid was found in the chest. The inferior part of the left lung, and one lobe of the right, were blackish, owing to an effusion of blood into their substance. The heart was augmented in size; the origin of the aorta was aneurismal, and lined with osseous scales in its dilated portion. Morgagni, in his reflections, refers the dilatation of the aorta to the too great force with which the enlarged heart sent the blood into that vessel; and he subsequently adds, as these lesions may be referred to the too great force of the left ventricle of the heart, so may we refer to the too great force of the right ventricle the cause why the blood, after having ultimately ruptured its vessels, spread itself with so much rapidity into the substance of the lungs, that is, into its vesicles (whence it issued with the sputa), that these viscera could not be very sound or very firm, on account of the flue constantly floating in the air, &c.[2]

A nearly similar opinion as to the different influence of the two ventricles on the pulmonary and cerebral circulations is found in the work of Bertin[3] when treating of hypertrophy of the right ventricle. We communicated, says the author, to Corvisart a case of which we have kept a copy. We recollect that, in this case, hypertrophy of the right ventricle terminated in a *coup de sang* in the lungs, by a kind of pulmonary apoplexy. The hypertrophied right ventricle, he adds, had exerted on the pulmonary artery, and on the lungs, an influence similar to that which hypertrophy of the left ventricle exerts on the brain in the production of certain diseases of that organ.

In addition to the fact mentioned by Bertin, we may relate one of older date, inserted in the *Bibliothèque Médicale*.[4] It presents, moreover, a case of the excellent effect produced by the water of the lauro-cerasus in the treatment of palpitations of the heart. A soldier named Seggi, a conscript of 1807, of bilioso-sanguine temperament, had suffered for several years with pulsations of the heart of extraordinary force, which prevented him from undertaking any fatiguing exertion. The necessity of leaving his family to proceed to the army, greatly increased the symptoms, and aggravated the disease. On the 26th of March, 1807, he was sent to the military hospital of Genoa. The palpitations of the heart were so strong that they could be readily perceived through the clothes. Hæmoptysis was not long in manifesting itself, and the lower

[1] Letter xvii. No. 21.
[2] Idem, No. 24.
[3] Traité des Maladies du Cœur, p. 318.
[4] Tom. xix. p. 232, for 1808

extremities soon began to be tumefied. The pulse was hard and frequent; the patient complained of heavy pain in the right portion of the thorax, a pain which was rendered almost insupportable by pressure; sleep was disturbed, and the respiration was difficult and fatiguing. One of the surgeons of the hospital bled him twice, but, as the palpitations continued strong and frequent, professor Mojon proposed trying the *anti-stimulant* virtue of the distilled water of the cherry-laurel. He began its administration in the dose of twenty drops a day, in about three pints of barley water, afterwards augmenting the dose each day until he carried it to fifty drops. The patient followed this plan for a month. His pulse began to be less frequent and resisting; the hæmoptysis wholly ceased; the palpitations diminished so much that he acknowledged they were no longer troublesome, and, in short, his strength increased to such an extent that, on the 20th of July, he was discharged from the military hospital in a fit state for undergoing military fatigue.

Although this case is incomplete, the palpitations, the hæmoptysis, the pain of the right side, leave no doubt as to the existence of lesion of the right ventricle of the heart; and what other lesion of that organ could have been dispelled under the influence of bleeding and the water of cherry-laurel?

To this case, I shall add the following, reported during my attendance at the Hospital Necker, and which, it seems to me, leaves no doubt as to the part played by hypertrophy of the right ventricle in aneurism of the heart, and as to its almost direct action on the capillary system of the lungs.

CASE I.

Hypertrophy of the right ventricle of the heart, with dilatation—Hæmoptysis—Pulmonary apoplexy—Death.

An ostler, aged forty-eight years, of strong constitution and sanguine temperament, with very short neck, although tall, was attacked, about six years ago, after pneumonia of the left side, with very strong and oft repeated palpitations of the heart. Progression became gradually more and more distressing by the oppression felt, especially on ascending. The upper limb and face were not long in becoming œdematous. The urine diminished sensibly, and from time to time he spat blood in some quantity; after having kept his bed for several months, he entered the hospital on the 16th of January, 1834.

At that time, he complained of severe pain in the left side. His face was livid and infiltrated, as well as his upper extremities; the jugular veins presented pulsations like those of the arteries; the respiration was constrained; the cough frequent; the expectoration somewhat copious; the pulsations of the heart very strong and extensive, especially on the right side; pulse frequent, hard, and irregular. In almost every part of the chest the respiratory murmur was heard, mixed with the mucous *râle* or rhonchus; he could not lie on either side; was compelled to remain on his back, &c.

Up to the 27th he was bled three times from the arm, and leeches were twice applied, but with scarcely any success. On the 29th, in the evening, a violent paroxysm of suffocation occurred; he lost his power of utterance; the pulse and the pulsations of the heart became tumultuous; the countenance was violet coloured, and the mouth covered with froth, as in asphyxia. He was bled twice; leeches with cups were applied over the region of the heart; but these means did not prevent coma, which carried him off on the 2d of February.

Necroscopy twenty-four hours after death.—The brain and its membranes exhibited nothing remarkable. The ventricle contained only a small quantity of fluid. The pericardium also enclosed about two ounces of citron-coloured fluid; the left cavities of the heart were normal; those of the right side had attained great development and an enormous capacity; the thickness of their parietes was doubled. These cavities contained, however, but a small quantity of black, liquid blood, and their apertures were not the seat of any organic change. The right lung was healthy, although slightly engorged at its posterior part. The left adhered to the inner surface of the thorax in nearly its whole extent; the pleura of that side was almost entirely transformed into false membranes of long standing. All the inferior lobe of this lung was of a reddish-black colour; its tissue was compact, and, when cut in slices, it presented the same colour; on scraping it with the scalpel semi-coagulated blood escaped. The parenchyma of the lungs was moreover the seat of induration, and was not crepitant. The vena cava ascendens and the pulmonary artery were gorged with black, coagulated blood. The organs of digestion and the peritoneum were in a normal state.

CASE II.

Hypertrophy of the right ventricle of the heart—Hæmoptysis—Cessation of symptoms after bleeding and fifteen days' residence in the hospital.

A female pasteboard-maker, thirty-eight years of age, of strong constitution and bilioso-sanguine temperament, mother of several children, had suffered for some time under palpitation, and constraint in respiration. These symptoms, which she bore tolerably well, increased sensibly on the first days of the month of May. She had violent palpitations, great difficulty of breathing, intense headache, paroxysms of coughing, and an unaccountable feeling of heat beneath the sternum. The expectoration, which was pretty copious, was, in a great measure, composed of black, frothy blood.

She continued in this manner to spit blood copiously for several days, without having any symptoms of inflammation about the lungs. She merely felt slight irritation in the throat; complained of headache, general indisposition, and difficulty of breathing. On the 6th of May, 1833, she determined on entering the hospital.

On the 7th, at the morning visit, the face was red; skin hot;

sputa copious, bloody, frothy, and mixed with bronchial mucus. Auscultation indicated no lesion in the lungs, but it detected, in the præcordial region, strong and perceptible pulsations of the heart, which form the diagnosis of hypertrophy of the right ventricle, without obstacle at the auriculo-ventricular apertures, and without any anormal noise (*bruit*).

She was bled to four cups; and the syrup of asparagus was prescribed, in the dose of two ounces, in an ordinary mixture. Absolute diet.

At the end of a few days, the pain in the head, the general indisposition, and the hæmoptysis, had greatly diminished; the respiration was executed more easily; and the pulsations of the heart had less repulsive force. The same means were continued; to which were added strongly *sinapised* pediluvia. Two broths (bouillons).

Some days afterwards, the blood entirely disappeared from the sputa; the other symptoms likewise ceased, and solid food was allowed her. The improvement continuing to be progressive, she left the hospital cured, after having been there about a fortnight.

CASE III.

Hypertrophy of the right ventricle and auricle, with dilatation, and with enlargement of the auriculo-ventricular orifice of the same side—Death—Hypertrophy of the right auricle and ventricle.

A labouring man, aged 51 years, of lymphatic temperament, and tolerably strong constitution, had enjoyed good health until the age of thirty-five, when he received a blow on the chest. After this accident, for which he was treated at the Hôtel-Dieu of Paris, he had copious hæmoptysis, palpitation of the heart, difficulty of breathing, cough, &c. The legs became alternately infiltrated, which complicated the primary condition in an unfortunate manner.

On the 26th of February, 1833, he entered the hospital.

On the 27th, his case presented the following characters:—face and lips of a violent hue; eyes prominent; sclerotica bluish; respiration difficult, and requiring the head to be raised; cough frequent; expectoration mucous, copious, and mixed with blood; pulse regular, but hard and frequent; considerable pain in the præcordial region, towards the right side; respiration vesicular, with mucous *râle* in large bubbles (*à grosses bulles*); pulsation of the heart very extensive, especially low down in the right side; external jugular veins tumid and pulsatile.

The diagnosis was—*dilatation, with hypertrophy of the right ventricle of the heart.* Bleeding at the arm was prescribed; *sinapised* pediluvia; an infusion of the tilia;[1] a mucilaginous

[1] The *tilia Europæa*, lime or linden tree (Fr. *tilleul*), is not officinal with us, or in Great Britain. It is a favourite antispasmodic and diaphoretic on the continent of Europe. The infusion and distilled water are officinal in France; the former is made by pouring two pints of *boiling water* on two drams of the *flowers of the tilia*.—*R. D.*

looch, with ethereal tincture of digitalis (fifteen drops); absolute diet.

On the following days, the face was more livid; the difficulty of breathing was marked; and the præcordial pain more intense. Fifteen leeches were directed to the region of the heart, and the same means were continued; absolute diet.

The patient experienced some paroxysms of oppression, which required the application of sinapisms, and a small bleeding at the arm; these afforded temporary relief. He was also benefited by a mixture, composed of an ounce of the syrup of the *rhamnus catharticus*, and as much castor oil. But, after transient remissions, the unpleasant symptoms increased with fresh intensity, and he died on the 22d of March.

Necroscopy twenty-four hours after death.—The cavities of the *pleura* contained no serous fluid; both lungs were crepitant and slightly emphysematous. The pericardium contained about three ounces of citron-coloured fluid, although the serous surface exhibited no lesion. The heart was very large; the right auricle considerably dilated, with thickness of its parietes; it contained a large quantity of blood; the auriculo-ventricular opening was excessively large, and occupied almost the whole extent of the septum, of which there remained but little trace; the tricuspid valves were very thin, and could not close the opening of communication between the auricle and ventricle on the right side; the ventricle was likewise dilated, and greatly hypertrophied. It contained much black blood in clots. The left auricle and ventricle were in a normal state.

The stomach and intestines presented nothing remarkable; the liver was rather bulky, and the other abdominal viscera were healthy.

The head was not opened; no symptom having indicated lesion of the organs contained in it.

CASE IV.

Hypertrophy of the right ventricle of the heart—Hæmoptysis—Cessation of the symptoms after several bleedings, applications of leeches with cupping-glasses, and seventeen days' residence in the hospital.

A washerwoman, aged forty years, of sanguine temperament and strong constitution, who had been subject, during her youth, to nasal hemorrhage, had enjoyed good health for a considerable time, when, in the first days of April, she felt general indisposition, cephalalgia, sense of suffocation, &c.

Some time afterwards, on the night of the 18th or 19th of April, she ejected a large quantity of blood; and the hemorrhage recurring, she came for assistance to the central office for admission into the hospital. She was bled from the arm, which relieved her greatly, and stopped the hæmoptysis—as, according to all probability, it was one. Two days afterwards, however, it recurred, which induced her to enter the hospital on the 25th of April.

At that time, she expectorated a frothy blood, mixed with a little bronchial mucus; the pulse was by no means frequent, but hard;

and the respiration not much affected. She had a troublesome cough, which was incessantly caused by irritation in the larynx. (A pectoral drink; *sinapised* pediluvia.)

On the 29th, the expectoration of blood was still very copious; percussion and auscultation afforded no evidence of lesion of the lungs; the pulsations of the heart were, on the contrary, very extensive, intermittent, irregular, and more strongly felt in the right than in the left side.

Under the upper part of the sternum, the distended jugular veins were the seat of pulsations, similar to those of the arteries. The pulse was nearly in the natural state, and presented no *irregularity;* the face was red, and the eyes injected.

Blood-letting was practised to three cups; a pectoral emulsive *tisane* was allowed for drink; and a mucilaginous linctus, with the syrup of the *symphytum officinale.*[1] (Absolute diet.)

On the 27th, the improvement was sensible, and the hæmoptysis much diminished; but in the night of the 28th and 29th, there was a copious expectoration of black blood; increase of the fits of coughing, preceded by acute irritation of the throat, &c. (Bleeding to three cups; same drink.)

This kind of recandescency disappeared on the following day, and she asked for food: she was put upon the use of the syrup of asparagus shoots, and of *sinapised* pediluvia; a sharp pain in the præcordial region, however, required the application of fifteen leeches, and three cups afterwards.

The hæmoptysis continued to diminish; auscultation was still negative as regarded the respiration; as, however, the loss of blood had been considerable, we endeavoured to arrest it entirely by a decoction of ratanhy root, given in the form of drink, along with the syrup of asparagus, in the dose of two ounces.

On the 4th of May, she had a fresh attack of hæmoptysis, preceded by an alarming sense of suffocation. She was again bled to four cups, and two sinapisms were applied to the legs. This attack was the last; from this time, the symptoms gradually disappeared, and on the 12th of May, when she left the hospital, the cure appeared to be complete.

To these four cases, we may add two others, published by M. Texier, in his inaugural dissertation.

CASE V.

Simple hypertrophy of the right ventricle, with slight purring-of-cat sound (*frémissement cataire*)—Cure.

Mary Jane Milleroux, aged twenty-six years, market-woman, of good constitution and lymphatic temperament, was admitted into

[1] The *symphytum officinale* (Fr. *grande consoude*) is officinal in almost all the pharmacopœias of continental Europe—the Austrian, Amsterdam, Batavian, Belgic, Brunswick, Spanish, Parisian, Ferraran, Genevese, Russian, Saxon, Wirtemberg, &c. The root contains much mucilage, with gallic acid. It is, therefore, gently astringent, and consequently employed in hæmoptysis, diarrhœa, &c.—*R. D.*

the Hôtel-Dieu, on the 19th of April, 1830, complaining of great oppression, palpitations, and copious spitting of blood. She had two children; but her catamenia had almost always been irregular, although they had been established from the age of fifteen. The pulsations of the heart had existed for several years; and for three years, the oppression and panting, when she walked more than common, had greatly augmented. From time to time, she spat some blackish, frothy, and very coagulable blood. These symptoms were relieved by rest, and by acidulous drinks, prescribed by an herborist; at length they returned with greater intensity at the beginning of April, which compelled her to give up work, and enter the hospital under the care of M. Husson.

The next day, she had the following symptoms. The respiration was heard well over every part of the chest. The ear, applied to the region of the heart, distinguished very strong pulsations, and manifest *frémissement cataire* (the purring-of-cat sound). These pulsations were heard beneath the sternum, and on the right side of the chest, accompanied, besides, by no peculiar sound. Nothing similar existed on the left side. The hand, placed on the præcordial region, perceived strong contractions to the right, as well as the *frémissement*, of which we have spoken. The pulse was very regular; the face slightly puffed; and the lips and sclerotica bluish.

A few moments after her admission, she had a violent fit of coughing, followed by a copious expectoration of blood. This expectoration diminished the oppression and the panting, which she had experienced for several days, and she slept a part of the night. (Bleeeding to four cups; gum water, with syrup of the *symphytum officinale; sinapised* pediluvia, &c.; two broths, *bouillons.*)

The next day, the improvement was not very manifest; the pulse was always regular; oppression and palpitations considerable. (Another bleeding; same drink; same regimen.) On the 22d, she did not feel relieved; the pulse was weaker; the *frémissement cataire* had disappeared; the hæmoptysis had ceased; the respiration was more free; and she asked for food. On the following days, the improvement from the bleeding continued; the pulsations of the heart were less strong; she got up, and remained up, without experiencing the least fatigue, or constraint in breathing. On the 8th of May, she left the hospital. She was recommended to be occasionally bled from the arm.

CASE VI.

Hypertrophy, with dilatation of the right ventricle of the heart, and of the auricle of the same side—Cure.

Briant, aged thirty-two years, terrace maker, of lymphatic temperament, feeble health, although of good constitution, and of somewhat considerable *embonpoint*, was received into the Hôtel-Dieu on the 30th of April, 1830. He had been compelled to leave off work, three weeks before, on account of pain which he had in the

præcordial region, and of frequent and violent palpitations, which augmented daily. Several times, in the middle of the day, he was taken with copious spitting of blood, which almost always relieved him. His legs were slightly œdematous; he had no appetite, and slept badly, not being able to keep the horizontal posture when in bed. When M. Husson saw him, he had the following symptoms. Face slightly puffed; eyes prominent, fixed, and watery; sclerotica and lips bluish; the right hand œdematous; the lower limbs much infiltrated, as high as the knee-joint; abdomen moderately tense, and not containing any effused fluid; respiration constrained and panting, especially during expiration; cough not very frequent, but it increased the præcordial pain. No expectoration; jugular veins dilated, and exhibiting constant pulsations; pulse strong, but regular, and by no means frequent; skin in its natural state, rather cold than otherwise.

Auscultation showed the respiration to be natural over the whole chest. When the ear was applied to the region of the heart, much louder pulsations were heard on the right side of the sternum, inferiorly, than on the left, and beneath the clavicle. No other sound was particularly heard, except those of the contractions of the ventricle and auricle. (Infusion of the *tilia* and orange leaves; mucilaginous julep, with nitre; *sinapised* pediluvia; three broths, *trois bouillons*.)

On the following day, the 5th, he exhibited his spitting vessel full of blood, which he had expectorated in the night, after a paroxysm of suffocation, which continued not less than an hour. This expectoration had relieved him; the pulse was stronger than on the preceding evening, but the oppression was still considerable: (bleeding to four cups; barley; the *triticum repens*[1] with nitre; a mixture with tincture of digitalis, fifteen drops.)

He was relieved by the blood-letting; the same treatment was continued. During the day of the 9th, an acute pain was felt at the middle of the sternum, which was followed by copious spitting of blood: (fifteen leeches to the region of the heart; *sinapised pediluvia*.) The pain disappeared, but the spitting of blood continued: the pulse was still strong; the pulsations of the heart tumultuous: (another bleeding to four cups; drink with nitre; a mixture containing twenty drops of cherry laurel water; diet.) The expectoration of blood ceased; and the patient felt much better; the urine flowed copiously: (same treatment.) The improvement continued; the infiltration of the limbs disappeared, and sleep and appetite returned. He was allowed food. From that time he had no recurrence of the spitting of blood, and was discharged from the hospital, cured, after a month's residence therein.

[1] The *triticum repens*, (Fr. *chiendent*,) which is in almost all the pharmacopœias of continental Europe, is not used in this country or in Great Britain. The roots furnish a little muco-saccharine matter, which renders a tisane made of them slightly demulcent.—*R. D.*

METHODICAL COMPRESSION.

RESEARCHES AND OBSERVATIONS ON THE EMPLOYMENT OF METHODICAL COMPRESSION IN DROPSIES, AND PARTICULARLY IN ASCITES.

Compression is an agent by means of which a number of different effects may be induced, when it is exerted in different ways and on different parts of the body. It may arrest the course of blood to a part, prevent the access of other animal fluids, or produce its atrophy and death. In this way must doubtless be explained the effect of strong pressure, which has been long employed to destroy tumours; vegetations which incessantly sprout afresh, and even cancerous masses; and, *a fortiori*, the effect of circular compression exerted on a tumour attached by a pedicle. Regulated compression, employed with another view, has often analogous effects. Who is unaware that a circular bandage, applied for some time around a limb, diminishes its size, and may even cause it to become atrophied, in an entirely mechanical manner? Again, the same compression, noxious in the case just mentioned, has often been employed to repress excessive nutrition of a part; to diminish, for example, the exuberance of cellular tissue in the elephantiasis of the Arabians: it has even been invoked, imprudently perhaps, to arrest the progress of certain cutaneous phlegmasiæ, which had extended to the subjacent cellular tissue.[1] Compression has likewise been used to prevent inordinate development of bony parietes, as of the skull, in certain cases of hydrocephalus. We shall hereafter make a few comments on this plan, which has been followed by the English and the Americans. In this last case, the pressure acts by opposing an external resistance to the internal force that distends the bones of the cranium; it is simply one mechanical force opposed to another, and which, *cæteris paribus*, has the greater chance of success, inasmuch as it can be augmented at pleasure—whilst that opposed to it is ever the same. The majority of the effects of external compression may be produced internally by the development of certain tumours in the splanchnic cavities; the displacement of certain bones; the disorganisation and augmentation in size of the viscera, whence arises a multitude of morbid symptoms of great importance, and which often play a part but little understood, and almost always imperfectly appreciated, in the production of many internal diseases.

The idea of employing compression in œdema, infiltrations, and hypersarcosis of the limbs, is very old, as Rhazes used it in elephantiasis after having excited resolution by the aid of emetics and cathartics.[2] It is an agency invoked in practical medicine and surgery. The following are two examples.

[1] See the Archives Générales de Médecine. Tom. ii. 192; t. xiii. 223; and t. xvii. Thesis *on the utility of compression in idiopathic inflammation of the skin*, by Brétonneau, (1815.)

[2] Phazii cum Serapis Averroch. Edit. Gerg. Frank. 1533.

CASE I.

Fifty-two years old—Suppression of the catamenia for four months—Intumescence and œdema of the right foot, leg, and thigh—Bathing—Bleeding—Fumigations—Scarification—Methodical compression over the whole limb—Cure after six months' treatment.

A woman, fifty-two years old, of considerable *embonpoint*, constantly enjoying good health, but irregular in her catamenia for the last four months, perceived, about two months ago, that the right foot and leg were swollen; and soon afterwards she could scarcely walk. In less than fifteen days the swelling reached the thigh; baths were prescribed, and a blister was applied to the calf of the leg, after it had been frequently washed with vinegar. On the 12th of April, some days after her entrance into the Hospital Saint-Antoine, the affected leg, thigh and foot were tumefied; the skin red, tense, and shining, and their movements difficult: there was neither pain nor engorgement in the course of the vessels. Pressure with the fingers left a fugitive depression. The ganglions in the groin presented nothing particular; the abdomen was every where painful; the stomach healthy; the chest sonorous, and the pulsations of the heart regular. When carefully measured, the diseased limb was larger than the other; at the knee it was eight lines more; and in the leg and thigh, eighteen or twenty lines.

M. Rayer, physician to the ward, had her bled, and directed emollient fomentations to the limb.

On the following days, the swellings increased; she complained of pain following the course of the vessels, and could not sleep; absolute rest was prescribed, and the emollient fomentations were continued.

On the 15th, scarifications were made in different parts of the thigh, and on the back of the foot; a little blood and serous fluid escaped in places where the œdema was most marked.

Twelve days afterwards (on the 27th), the scarifications being healed, methodical compression was commenced from the extremity of the foot to the middle of the thigh by means of a roller.

For twenty days, the compression caused no unpleasant effect, and the limb had evidently diminished in size.

On the 21st of May, she complained of indisposition, cephalalgia, and prickings; and in certain parts of the body there was a small eruption of red pimples. She was bled to three cups; the blood was buffy, but the clot swam in the midst of a large quantity of serum. The bleeding was repeated, fifteen days afterwards, for nearly similar symptoms; the limb continued to diminish in size, but it was harder, and the skin was more tense and firm. Compression was used over the whole of the diseased limb. Colic, followed by slight diarrhœa, supervened, which had no noxious effect on the treatment; baths and emollient clysters controlled this new symptom; the limb continued to diminish in size under the influence of the compression. She began to walk about, during the first days of July, and left the hospital on the 19th of the same

month, there being only an augmentation of four lines in the circumference of the lower part of the diseased limb, above the ancle, and a slight degree of firmness in the subcutaneous cellular tissue.

CASE II.

Twenty-five years of age—Intumescence, pain and œdema of the left lower extremity three days after accouchement—Compression with a bandage, and afterwards with a *cuissard*—Cure at the end of fifty-five days.

Another female, twenty-five years of age, having arisen imprudently the fourth day after her third accouchement, was attacked with pain in the direction of the vessels, and numbness in the left lower extremity, which soon began to swell; she continued to walk about, until acute suffering in the joints compelled her to rest; the skin was not red, but it was œdematous, and retained the impression of the fingers: blisters and a roller to the affected limb had already somewhat diminished the œdema, when she was received into the Hospital Saint-Antoine, on the 11th of August, 1830.

At that time the left lower limb, when acurately measured, was of greater circumference than the right—at the calf an inch and a half, and two inches and a half at the middle of the thigh. The skin had the ordinary colour, was not painful on pressure, and did not retain the impression of the fingers. The course of the vessels was in no wise painful, nor were the joints. Absolute rest; compression with a roller from the foot to the top of the thigh were recommended.

On the 15th of September, the limb was measured after the compression had been continued, without interruption, for twenty-five days; the size of the lower part of the leg was the same; and there was not more than six lines difference between the two calves and the two knees. At the lower part of the thigh, and five or six fingers breadth above the knee, there was a considerable difference between the limbs; there was, moreover, a hard and resisting engorgement, which was combated by a roller and graduated compression.

At a later period, a leather *cuissard*, or laced stocking for the thigh, lacing on the outside, was applied, to exert a more equal and uniform compression, which completed the cure. She appeared to be perfectly well on the 5th of October.

The use of compression in dropsies of the splanchnic cavities, without discharging the fluid, is not of distant date; and it is to the English—as it is well known—that we are indebted for this new therapeutical resource in a disease so rebellious against the efforts of art. Monro, however, who passes for one of the first that employed it, used it only as a precaution against the lipothymia, which, he conceived, must result from the sudden return of the blood into the vascular system of the abdomen, immediately after paracentesis, and the removal of a large quantity of serous fluid.

A physician of the Hôtel-Dieu (M. Recamier) thought better of this mechanical process, believing it adapted for effecting a radical cure, and the work which he has published attests that he has extended its employment to cases still more serious than those of abdominal dropsy. Without enquiring, in this place, whether, as has been affirmed, our *confrère* first discovered the curative action of compression in ascites, we shall see, that, for fifteen years, another physician of the Hôtel-Dieu had employed it successfully.

CASE III.

Eighteen years of age—Ascites—Diuretic drinks—Leeches—Digitalis—Methodical compression of the abdomen—Cure in a very few days.

In 1824, M. Godelle, of Soissons, published a case in the *Bibliothèque Médicale*,[1] of which the following is an extract:

A cordwainer, eighteen years of age, of weak and sickly constitution, was received into the Hôtel-Dieu, of Soissons, on the 5th of July, for different symptoms, such as pains in the stomach, abdomen, diarrhœa, &c. On his admission he complained, moreover, of dry and burning heat; the pulse was small, contracted, and quick; the urine scanty and red; and obscure fluctuation was detected in the abdomen. Leeches were directed to the epigastrium and the hypochondria; mucilaginous drinks, with nitre, were prescribed; and oily liniments and emollient fomentations to the abdomen, with a greater allowance of food. These means, with some variation, were continued for a fortnight, with the exception of the leeches, which were only applied twice. The effusion did not diminish; the patient went from the hospital, but returned a fortnight afterwards. He had then a dry, frequent cough; the abdomen was tense, tumid and painful; the urine scanty, and red; the skin dry; the pulse small and quick; and he had diarrhœa. Recourse was again had to the oily embrocations and mucilaginous drinks, to which was added the use of digitalis in a small dose, but it was soon rejected: the size of the abdomen speedily increased so much as to cramp the respiration considerably, and to threaten suffocation.

It was then that M. Godelle resolved to employ compression. He first applied a bandage to the body, which, instead of augmenting the dyspnœa, rendered the breathing more easy. This first bandage, which was soon displaced, was subsequently replaced by a large cincture, laced like a corset, which embraced the abdomen, and could be relaxed or tightened at pleasure. In five days, the abdomen was restored to its ordinary size, and the effused fluid had disappeared. In proportion as the fluctuation became less sensible, the cincture was diminished by transverse reefs or folds, which still enabled it to exert energetic pressure. At the same time he was ordered internally a few grains of digitalis in powder, to favour the absorption of the effused fluid. The publication of this

[1] Nouvelle Bioliothèque Médicale. Sept. 1824.

case reminded me[1] that whilst I was *élève interne* at the Hôtel-Dieu, in the wards under the direction of M. Husson, that gentleman had occasionally recourse, and successfully, to compression in ascites. Having consulted my notes I found the following case in them.

CASE IV.

Age, twenty-one years—Ascites of six months' duration—Diuretic drinks (squill, digitalis)—Drastic cathartics—Puncture—Methodical compression—Cure at the end of a fortnight.

Mary Ann Mattan, aged twenty-one years, of sanguine temperament, habitually enjoying good health, and regular in her menstruation since the age of seventeen, although the flow has not been copious, had never been sick before the present occasion. About six months ago, dwelling in a very damp street, she observed that the abdomen gradually began to swell, but without any pain. At the expiration of three months, the abdominal distension rendered the breathing difficult; the appetite ceased, and she was unable to sleep, &c. She was as yet ignorant that she was dropsical. When she entered the Hôtel-Dieu, on the 23d of January, 1815, she had lost much of her *embonpoint*, yet her complexion was florid; the abdomen was very much distended; pressure caused no pain, and percussion denoted evident fluctuation. The most attentive examination gave no reason for the presumption that there was any engorgement in the abdominal viscera.

Recourse was had, in the first instance, to aperient drinks; to the use of active diuretics, as the squill and digitalis; and afterwards drastic cathartics were prescribed. The urine became more copious: other symptoms of the disease likewise yielded, but the improvement was transient. The effusion subsequently increased inordinately; the respiration became so difficult that paracentesis appeared necessary. By means of this operation a considerable quantity of transparent colourless fluid was withdrawn from the abdomen; after which, when pressed with care, the abdomen presented no engorged or painful point. After the puncturation, the resin of jalap, combined with nitre, in a purgative dose, was prescribed; the urine became more copious, but this did not prevent the recurrence of the ascites; and soon a manifest fluctuation showed that a fresh quantity of serum had been effused into the cavity of the peritoneum.

It was now determined to employ methodical compression of the abdomen by means of a bandage laced like a corset, which embraced the whole of the abdominal parietes. This bandage could be tightened at pleasure, as the abdomen diminished in size. The compression was methodically exerted from the base of the thorax to the pelvis, consequently every part experienced equal pressure. It was not long before the urine flowed more copiously, and exhi-

[1] The first idea of the present work was entertained in the year 1824; I commenced writing it at that period, but it has been deferred until the present time, for reasons which are of but little moment to be known.

bited, at the same time, a favourable change in its colour and density. The abdomen gradually diminished in size, and, at the end of a month, every sign of fluctuation had disappeared. Fifteen days afterwards she left the hospital entirely cured, having regained her freshness and habitual colour.

CASE V.

Sixty years of age—Epigastric pain—Vomiting—Leeches—Ascites—Methodical compression of the abdomen—Cure at the end of a month.

The recollection of the case just detailed, and that of M. Godelle, suggested to me the employment of the same means in a patient of the fourth dispensary, named Clapier, who lived in Rue Saint Victor. This man was about sixty years old; he was of a pale colour; the skin flaccid and disposed to infiltration; and he suffered pain in the epigastrium; he digested with difficulty, and occasionally rejected his food. I fancied that I could detect engorgement and induration in the region of the stomach. Leeches were applied to it, and afterwards a blister. He believed himself cured, and left the dispensary. Some time afterwards[1] he came to consult me. I then discovered manifest fluctuation, denoting the effusion of a considerable quantity of serous fluid into the cavity of the peritoneum. After again having recourse to the application of leeches, which appeared to me to be indicated, and having used diuretic drinks, without deriving much advantage from them, I had recourse to methodical and graduated compression of the abdomen, exerted by a laced bandage from the base of the chest to the hips. The pressure was skilfully graduated, and maintained constantly, night and day, for about eight months. A considerable period before the termination of the treatment, I examined him and he seemed to me to be perfectly cured. I have attended Clapier for another disease, and satisfied myself that there was then no trace of effusion into the abdominal cavity.

CASE VI.

Age, thirty-seven years—Intermittent—Ascites—Purgatives—Diuretics—Two punctures—Methodical compression, aided by diuretics and cathartics—Cure at the end of three months.

The following case is extracted from an unpublished collection, addressed to the *Académie de Médecine*, by Dr. Claret, of Vannes. A female, thirty-seven years of age, was admitted into the hospital at Vannes, in November, 1825, labouring under ague; the sulphate of quinine was administered in the ordinary dose, and the paroxysms disappeared. Having remained in the hospital for a verminous affection, for which anthelmintics had been administered, it was observed, that her abdomen increased in size; that her legs swelled; and that the urine was less copious than usual. Recourse was had to cathartics, which gradually diminished the

[1] During the summer of 1823.

dyspnœa she experienced. These agents, however, and several others that are commonly given in dropsy, having had no success, paracentesis was determined upon, by which twelve quarts of fluid were drawn off.

Three weeks afterwards the operation was again demanded, and at least as much fluid discharged. For two or three days the fluid continued to flow through the aperture made by the trocar. Immediately after the operation, the abdomen was carefully compressed by means of a bandage accurately applied, and some diuretic and cathartic drinks were given. After having employed compression for three months, she left the hospital, cured, and resumed her occupation. Of all her symptoms, there remained but a slight puffiness, which appeared in the evening, after the labours of the day. Four months afterwards, she returned to the hospital, for acute gastro-enteritis, of which she died in eighteen days.

On opening the body, there was found in the cavity of the arachnoid, and in the right side of the chest, a little fluid effused; but the abdomen, in which there had previously been considerable effusion, showed not a trace of it. The peritoneum, which was healthy in its greatest part, had contracted adhesions with the convex surface of the liver, which, in other respects, showed no alteration of texture. The mucous membranes of the stomach and duodenum were of a deep red, and presented evident traces of inflammation. There was no other morbid appearance in the cavity of the peritoneum.

CASE VII.

Ascites consecutive on peritonitis—Cathartics—Preparations of squill and mercury without success—Compression with the bandage of Monro—Copious flow of urine—Cure at the end of about a month.

The Annals of Medicine of Milan[1] also present us with a case of ascites, cured by means of compression, communicated by Dr. Speranza. In the month of April, 1826, a female was received into the Institute, a clinical establishment at Parma, with all the symptoms of ascites, which had existed for some months, and appeared to be owing to peritonitis. She had fever, derangement of the digestive organs, and the urine was turgid and scanty; thirst; considerable emaciation, &c. The abdominal distension prevented the condition of the abdominal viscera from being examined. Cathartics, preparations of squill and mercury, having produced no marked improvement, M. Speranza had recourse to graduated compression of the abdomen, by aid of the bandage of Monro; from that time the urine began to flow copiously; the patient did not pass less than fifteen pints a day, for three weeks; the fluctuation disappeared, and the abdomen resumed its natural size. The compression was continued for some time, joined with the use of bitters and a tonic regimen. She left the hospital in a state of flourishing health.

[1] Vol. xl., 433.

CASE VIII.

Age fifty years—Œdema of the left arm—Ascites—Diuretics and cathartics, without success—Methodical compression of the abdomen—Cure.

On the 1st of August, 1826, a letter of consultation was addressed to M. Husson, physician to the Hôtel-Dieu, and myself, by a physician in the environs of Dijon, touching the health of Madame R——, aged about fifty years. It appeared manifest from this statement, which was circumstantial in its details, that the patient was labouring under ascites. The author had noted carefully, that the thoracic viscera presented no lesion, and that there was no reason for believing the existence of any in the abdominal organs prior to the disease in question. The digestive organs were in a healthy state; there was as yet no sign of swelling in the lower limbs, but the left arm had been long œdematous. I had, indeed, attended her for it, two years previously, with Professor Marjolin.[1] There being no counter-indication as to the administration of active cathartics, and diuretics, her physician advised them, but without success; this determined him to ask advice of the physicians of Paris. We suggested some other agents, that had been more or less celebrated in the treatment of dropsies, and especially methodical and constant compression of the abdomen with a laced bandage, which should accurately compress the abdomen from the pelvis to the base of the chest, and could be gradually tightened by means of straps with holes in them. We learned that this plan had ultimately full success, and that the physician referred the cure wholly to compression.

CASE IX.

Age sixteen years—Tumefaction of the knee—Dropsy of the femoro-tibial articulation—Rest, horizontal posture—Methodical compression of the knee—Cure in twenty-eight days.

A young man, sixteen years old, having been wounded in the knee by a thorn, appeared to be cured at the end of two days; he consequently continued to apply himself to business; soon, the knee began to swell; walking became difficult, painful, &c. Rest, and the application of a few leeches to the affected parts, diminished the swelling a little; but having again resumed his occupations prematurely, the knee began again to swell, and he was soon unable to walk without excessive pain; on this account he decided upon entering the Hospital Saint Antoine, on the 2d of August, 1829.

The affected knee was at that time double the ordinary size. Above the patella there was a considerable prominence, which became insensibly confounded with the lower part of the muscles

[1] The basis of the treatment was also methodical compression by means of a laced glove, well made, which compressed the limb from the extremity of the fingers to the axilla. This was at first attended with considerable success; but it did not continue after the patient left Paris. Its application was perhaps neglected.

of the thigh. Others of less size existed at the lateral parts of the thigh. The prominences were greatly increased when the limb was bent on the thigh; the skin covering them was tense, resisting, and doughy as it were: the patella touched the condyles of the femur and tibia. When, on the contrary, the limb was extended, the patella was raised from the articular surfaces by means of a fluid, which, by pressure, could be made to flow up or down. If, whilst the limb was extended, the knee was percussed or compressed, by one of the hands placed above and the other beneath the patella, fluctuation was distinctly felt. He walked with difficulty, but every other function was in a normal state. M. Rayer, who was in attendance, prescribed rest, the horizontal posture, and methodical compression of the limb above the knee. On the first day, compression was painful, and it became necessary to loosen the bandage; but, on the following days, pressure was borne better, and the tumefaction of the knee was not long in diminishing.

At the end of eight days, the affected knee had lost a third of its acquired bulk, and fluctuation was no longer sensible; the doughiness (*empâtement*) alone remained: during extension, the patella rested on the articular surfaces. In order that compression might be more effective and more uniform, compresses were applied semicircularly above, and on each side of the patella—a point to which the effused fluid was crowded, owing to the retrocession of the patella, which naturally projects forward.

He left the hospital on the 20th of August, having no pain in the joint, and walking with ease. There was slight œdema above the patella, but the knee was almost restored to its normal size. The compression had been discontinued a few days before his exit, and nothing indicated the return of the effusion.

CASE X.

Imprudent use of cold drinks—Ascites—Want of success of the ordinary means—Methodical compression of the abdomen—Urine copious—Speedy cure.

M. Godelle, of Soissons, already cited at the commencement of this memoir, has inserted in the *Revue Médicale*, for January, 1829, another case of success from compression in ascites. In the case of a baker's boy, labouring under ascites after the use of a great quantity of cold drinks while bathed in sweat, M. Godelle, having employed the ordinary means without benefit, had recourse to compression, after having hesitated for some days on account of the difficulty of breathing and some symptoms of aneurism of the heart. The effect of the abdominal compression was, notwithstanding, most satisfactory; under its influence, as is commonly the case, the urine flowed copiously; and the size of the abdomen diminished so rapidly that at the end of eight days fluctuation could be no longer felt; the cellular infiltrations which accompanied the ascitic effusion likewise disappeared; and the patient soon left the hospital. Two or three months afterwards, he returned for pulmonary catarrh, which had existed only six days. M. Godelle satisfied

himself that there was no longer any trace of serous effusion in the cavity of the peritoneum, and that he was solidly cured.

The following is a case of ascites treated by compression employed immediately after puncturation. It is remarkable for its simplicity, and for the favourable circumstances in which the subject of it was placed, although the disease had been of long continuance.

CASE XI.

Age forty years—Ascites of four years' duration—Failure of cathartics and diuretics—Paracentesis—Compression of the abdomen—Cure at the end of some months.

Madame D * * *, aged forty, wife of one of the servants of the *Académie Royale de Médecine*, had been ascitic for four years: she had noticed her abdomen greatly increasing in size, without experiencing any other inconvenience than that resulting from the constraint produced by the abdominal tension. Menstruation was not deranged; most of the other functions were executed freely, and the appearance was that of a person in perfect health.

The patient did not think of having recourse to any treatment so long as the abdomen was neither too unwieldy, nor too bulky; but when it became a heavy burthen, making walking difficult, and not allowing her to wear a corset, without exposing herself to an inconvenient sense of suffocation, she decided on applying for relief in the early part of last June. I was then consulted. My opinion was that she should be tapped, and have recourse, subsequently, to some energetic means to prevent fresh effusion into the cavity of the peritoneum. In the mean time, until I succeeded in surmounting difficulties that were thrown in my way, I employed diuretics and active cathartics, but without any improvement.

The patient having decided on submitting to paracentesis, we proceeded to the operation on the 19th of July.

Through the opening made by the trocar we drew off twenty quarts of limpid, colourless fluid; we then explored the condition of the abdominal viscera, which appeared to us to be free from every kind of engorgement: the strongest pressure caused no pain. The enormous distension and extenuation of the abdominal parietes permitted this exploration to be made in a very complete manner; and by crowding the intestinal contents into one side of the abdomen, the examination of the parts on the opposite side was greatly facilitated. With such conditions it was easy to satisfy ourselves that no unpleasant complication existed, and that there was no obstacle to the employment of compression.

It was effectively put in use by means of the laced bandage already prescribed, which was continued for several months without any other means. No sign of effusion manifested itself, and the patient at this time seems to be completely cured; that is, more than four months after paracentesis, and the uninterrupted use of the graduated compression on the abdomen, which is still continued as a means of prevention. She has had some symptoms—

but they do not seem to have been in any way connected with the disease of which we are speaking—such as pulmonary catarrh, erysipelas of the face, followed by obstinate scabby eruptions, &c.

As I before remarked, endeavours have been made, with the aid of compression, to combat the ever increasing extension of the parietes of the cranium, in cases of hydrocephalus, and to cure cerebral dropsy. This agency has been chiefly invoked, after puncturation, as in cases of ascites. Dr. Glover, surgeon,[1] of South Carolina, having treated a child a few months old, afflicted with hydrocephalus, unsuccessfully for two months and a half, resolved to practice paracentesis of the cranium; the head of the little patient was at the time two feet in circumference; the sutures were separated; and fluctuation was manifest. There was strabismus; but the general condition was in other respects satisfactory. Puncturation was practised in the course of the sutura squamosa. It gave issue to a quart of serous fluid. The subsidence of the integuments, and the play of the bones on each other, induced the operator to draw off no more; a methodical bandage was then applied to exert a moderated compression, and keep the bones in contact. No unpleasant symptom followed; the greater activity of the urinary secretion was the only phenomenon that succeeded this hazardous operation. Two days afterwards, another quart of fluid was drawn off by the same aperture without any accident. The compression was continued. Six days after the first puncturation, Dr. Glover performed a second, to give exit to fresh fluid which had collected. This time he drew off three pints. For the ten succeeding days the condition of the child appeared to improve under the influence of methodical compression. It became fatter; the bones of the cranium approximated; the urine continued to be secreted copiously, and, what is worthy of remark, the eyes resumed their normal direction. A fresh accumulation of serum, however, required a fresh puncturation, which was performed in the coronal suture. A quart of fluid was drawn off, and compression again had recourse to. More than a month of remarkable improvement followed this last paracentesis and the accurate application of the compressive bandage; but it became subsequently necessary to repeat the puncturation twice, by which only a pint of fluid was abstracted. The child at length died eight days after the last operation. On opening the body the brain was found almost wholly destroyed, and three quarts of blood were effused into the cavity of the cranium.[2]

A little later, an English physician, Sir Gilbert Blane, also proposed compression of the cranium as a preservative in those who, with the bones of the cranium thin, movable, and extensible, might

[1] M. Bricheteau says "first surgeon," (*premier chirurgien,*) but he is not very exact in those matters. In his "Considerations on the Art of Observing," he says that "a Quaker of Transylvania (Franklin) drew thunder from the heavens and subjected it to experiment!"—*R. D.*

[2] Nouveau Journal de Médecine, Chirurgie, et Pharmacie, April, 1819.

be threatened with hydrocephalus. He relates two cases in support of this prophylactic agency. The first occurred in a child sixteen months old, whose head from birth had been very large, and the upper fontanelle singularly open: there was, moreover, curvature of the spine: for several months he had been dull, inclined to somnolency; and his crying out, with the frequent application of his hand to the forehead, indicated that he suffered much in the head: his pupils, moreover, were dilated. A circular bandage was applied moderately tight around the head; and, in the course of the treatment, cathartics were frequently administered. In less than three months all the symptoms of cerebral affection had disappeared. The second child of which Sir Gilbert speaks was three years of age. He had a very large head, the fontanelles of which were not yet closed; methodical compression appeared to be very advantageous, and to arrest the development of the cranium.[1] In 1822, another English physician, Costerton, employed the plan of Sir Gilbert on a child three months old, which had a considerable prominence on one side of the head, formed by the elevation and disjunction of the left parietal bone: the head was not long in assuming a regular shape; and the health of the child, which had been wavering, improved in a marked manner.[2] The author adds, that the utility of compression in this case was more presumptive, as a brother of the little patient, affected with precisely the same disease, had died of hydrocephalus two years previously.

Three years later, two other English physicians again tried the use of compression, after having practised paracentesis, on infants labouring under hydrocephalus, but with ephemeral success; a fatal termination was not prevented; in this respect they resemble the result of the case related by Dr. Glover.[3]

From the facts just related, we are far from concluding that compression, employed as a prophylactic and after puncturation of the cranium, is an efficacious means against hydrocephalus. What we wish to affirm at this time is, that compression in the cases above related, instead of having caused unpleasant symptoms, has afforded relief, and retarded the effusion of fluid into the cavity of the cranium: in addition to this, it has increased the urinary secretion, a phenomenon deserving of meditation, especially as an entirely similar effect is observed when the abdomen is compressed in persons labouring under ascites.

There are two things to be considered in cases of dropsy treated by compression—the suppression of a vicious exhalation of serous fluid, which is indefinitely reproduced, and the absorption, or rather the retrocession, of the fluid. These two phenomena occur under the influence of purely mechanical causes; and in their accomplishment there is nothing, as it were, vital, in the sense commonly

[1] Medical and Physical Journal, by William Hutchinson; for September, 1821.

[2] Ibid. January, 1822.

[3] London Medical Journal, for October, 1825; and Edinburgh Medical and Surgical Journal, same year.

given to the term. Let us examine what happens, carefully disengaging the mind from every preconceived idea—from every kind of system. The pressure excited by the bandage is communicated to the fluid; the fluid presses in turn on the exhaling surface, and mechanically prevents the afflux of a fresh quantity of serosity; consequently, instead of the effusion augmenting with the distension of the abdominal parietes, which is canceled by the compression, it is constrained to remain stationary: in this way, the progress of the serous exhalation into the cavity of the cranium is arrested, inasmuch as it is impossible for fresh fluid to enter a cavity wholly filled, and not admitting of farther distension; hence arises a retropulsion of the serosity separated from the blood—a retropulsion, which, by gradually communicating itself to the full canals, must induce some modification in the mechanism of nutrition. This modification must have a considerable relation with that which results from compressing the blood-vessels—crowding the blood into those that are above the point compressed. It is commonly said, when an effusion has disappeared, that the absorbing vessels have taken up the effused fluid; but, from what we have just said, it would perhaps be more natural to attribute its disappearance to a kind of imbibition, the mechanism of which has an entirely special relation to the effects of the compression. No one, at the present day, doubts that, by virtue of this imbibition, the living tissues are susceptible of being penetrated and traversed, to a considerable extent, by animal fluids, without the concourse of exhalation and absorption. The experiments of M. Fodera, crowned in 1824 by the Institute, leave no doubt on this matter. There are cases in which the effects of this imbibition are admissible with difficulty; as, for instance, when the compression succeeds in causing the disappearance of an albuminous mass floating in the midst of the effused fluid; or when it acts on a cavity that has no outlet, and is surrounded by hard parts, as in the case of certain articular cavities.

M. Godelle, who has published many facts on the advantages of compression, believes it possible to attribute its effects in the cure of dropsies to venous absorption, which, he says, is rendered more active by this retardation of the circulation in the abdominal aorta, by the pressure made on the abdominal venous blood, and its precipitate return into the vena cava. This explanation, which has not appeared to us very lucid, seems to be contradicted by the action of copious blood-letting, which unquestionably renders the arterial and venous circulation more ready and rapid, and excites, in a marked manner, the absorption of effused fluids.

We may mention, in concluding, another effect of compression, which is much more readily comprehended. This is the production of adhesions amongst the viscera contained in the abdomen, by means of the peritoneum which envelopes them—adhesions which, in certain cases, oppose the recurrence of the effusion, as is incontestably shown by the case cited from those sent to the

Académie Royale de Médecine by M. Claret, of which we previously gave an analysis.

We have yet to say a few words on the inconveniences and dangers of compression. We have seen patients who could not bear it, in consequence of its causing difficulty of breathing, in a manner easily comprehensible.

We have also remarked, that it sometimes caused pain in the abdomen of those labouring under ascites, in whom there was, doubtless, at the same time, ascites and peritonitis; but we may say that, in the majority of cases, compression is perfectly innocuous, and that it gives rise to no unpleasant symptom.

From its having happened that inflamed parts have been dangerously injured by compression, it must not be concluded that it is always so, especially when the phlegmasia is external. Thus, M. Velpeau, in a memoir, which we have cited above, admits, unhesitatingly, that compression, in phlegmonous erysipelas, repels and arrests the accumulation of the fluids produced by the inflammatory irritation, and *strangles* the disease, without the production of serious accidents, in the generality of cases.

As for the danger, there ought to be none in employing it; inasmuch as its application can be arrested on the instant, when it begins to be injurious, and its consequences, which are in nowise comparable to those of internal medicines, ought to inspire no dread.

OVARIAN DISEASE.

DISEASE OF THE OVARY OF THE RIGHT SIDE SIMULATING EXTRA-UTERINE PREGNANCY.

Expulsive pains—Bellows sound—Incision of the posterior paries of the vagina—Death—Encysted carcinomatous tumours.

A woman, aged forty-seven years, who had been long married, but had no family, was admitted into the hospital in the course of the month of June, 1834. Her catamenia had been suspended for about nine months; and she stated, that at the time of the conception of the child, which she fancied to be within her, a violent strife, caused by jealousy, had occurred between her and her husband, which often gave occasion to their separation; the distension of the abdomen was that of a female at the full period, and she had pains announcing her approaching delivery. In the right flank an irregular tumour was distinctly felt, which had the shape of a child's head; on the other side, there was another prominence, which might be regarded as constituted by the feet of a fœtus. This tumour was displaced, when the body was moved.

The patient said that she felt distinctly the motions of the child. There was a manifest bellows sound (*bruit de soufflet*) in the tumour, which was believed to be the placental blow (*souffle*). On the first examination by "the touch," the neck of the uterus could not be found; on a second attempt, made the day after, by M. Baudelocque, physician to the *Hôpital des Enfans*, who devotes himself especially to obstetrics, the uterine orifice was met with under the pubis. It was not dilated. In a third "touch," practised simultaneously by the rectum and the vagina, the same *accoucheur* discovered the presence of a fluctuating tumour, which he could displace with the finger, and which evidently formed part of the external abdominal tumour.

The pressure made by the tumour caused retention of urine; so that it was necessary to pass the catheter. She suffered considerably, and at intervals, as if in labour; she was without fever, or heat of skin; and when pressure was made on the abdomen, the pains became more frequent, and assumed an expulsive character, so as to occasion frequent useless efforts. Notwithstanding the use of baths, cataplasms to the abdomen, and blood-letting, the state of the patient grew worse and worse; she had not a single instant of rest, and her suffering became so horrible that she called aloud for them to extract the child, of which she believed herself pregnant, still affirming that she felt its motions.

The state of the tumour was again investigated on the 8th of July, by the physicians and surgeons of the hospital, to whom M. Baudelocque had the goodness to associate himself. It was generally thought, that there was extra-uterine pregnancy of the right ovary, and that she could only be relieved by making an incision down to the parietes of the cyst, which was presumed to contain a fœtus. In the consultation, it was long agitated, whether there existed a simple cyst, and what must be done, should no means be capable of relieving her intense suffering. It was agreed that an exploratory incision in the vagina was the only means that could promise any advantages, especially as there were no signs of peritonitis. This incision was made by M. Laugier, surgeon to the hospital, at three o'clock, P. M., in presence of MM. Dubois (of Amiens), Piédagnel, two foreign physicians, and a considerable number of pupils. After having again verified the condition of the patient, and the existence of the sound that was mistaken for the placental *souffle*, the strength of which was besides explained by the approximation of the tumour to the abdominal paries, an incision was made in the posterior paries of the vagina, without the production of much pain; a quart of clear but bloody fluid was discharged; and the index finger, introduced into the wound, detected a cyst, but nothing like a fœtus could be felt. She was placed in bed; emollient fomentations were applied to the abdomen, and a rigorous diet prescribed. On the day after the operation, she felt much relieved; the abdomen was but moderately painful, and the pulse a little frequent; there was no heat of skin.

On the 8th, she was nearly in the same state as on the preceding

evening, except that the frequency of the pulse was much greater—112 pulsations per minute. The retention of urine recurred, and the bellows sound was heard as before the operation. She could only lie on the back; as soon as she turned upon the side, anxiety and acute pains came on; yet the abdomen was not at all sensible to pressure. Towards evening, fifteen leeches were applied to the perinæum; the emollient fomentations were continued, with gum water, and absolute diet. On the 9th, the features changed; the pulse became quicker, and the patient had sad presentiments, and constant jactitation. On the 10th, symptoms of peritonitis came on during the night; twenty leeches were applied to the abdomen, which was so painful that it could not bear the slightest pressure. On the 11th, the features were completely changed; the pulse was extremely small; the respiration hurried; and death occurred in the following night.

Necroscopy.—The tumour had settled considerably, and descended into the pelvis. After having divided the abdominal parietes, traces of peritonitis were found at the lower part, with albuminous flakes, effused serum, and the intestinal convolutions adherent by false membranes. The tumour was irregular and multilobated; on the left side it was pyriform, and somewhat like an amplified uterus; it was, in reality, in the cavity of that organ that a tumour had become developed, of the size of a large pear, and of a lardaceous character, but slightly softened. This tumour was covered by the womb, which appeared to be laminated in some measure, to afford an envelope to the adventitious production within it. It was, moreover, in communication with the vagina and cervix uteri, which was rendered so thin that it formed a small membranous opening of two lines only. The right portion of this tumour was composed of several lobes, whose surfaces were unequal, rough, ulcerated even, and covered, here and there, with membraniform flaps, or shreds (*lambeaux*). Internally, they were formed of several organic degenerations, such as carcinomatous and encephaloid tissues, separated by cellular septa, and small cysts, filled with pus, or a brown and ichorous serous fluid. No traces were found of the ovary, which had been probably invaded by the alterations which we have described, if it had not been itself their primary seat. At the inferior part of the pelvis behind, there was another mass, which, on the one hand, compressed the bladder against the arch of the pubis, and, on the other, pushed the rectum upwards and backwards, and pressed on the posterior paries of the vagina. In this portion of the tumour, cysts with a serous surface were observed, the exterior of which became confounded with the disorganised mass, and the diameter of which was about two or three inches. The incision, made into the posterior wall of the vagina, had penetrated one of these which had collapsed; another, situated behind, had not been opened; from this, a considerable quantity of fluid flowed. These two cysts, distended by fluids, and pressed by the weight of the tumour, evidently exerted a compression upon the bladder, vagina, and rectum. To this

cause must be referred the retention of urine, and the excessive pain of which the patient complained.

REMARKS.

It is important to remark, in the first place, that the peritonitis existed only *externally* (?)—we mean at the external surface of the intestines; that it did not penetrate the lesser pelvis, and that the abundant cellular tissue which filled that cavity presented no trace of inflammation and suppuration; and the same may be said of the environs of the wound made by the incision, which had even begun to cicatrise. From this it is evident that it was not the operation that caused the peritonitis—it existed previously; and that to this disease must be ascribed the violent pain of which the patient complained, although there was neither fever nor morbid heat, and the abdomen was only moderately painful on pressure. It cannot even be said that the operation hastened her death, for she was relieved for two or three days; and it must be borne in mind, that the sufferings which she experienced before the operation were intolerable, and on the point of rupturing every bond of life. With a single cyst without peritonitis, we might conceive the possibility of cure, if even the cyst had contained an extra-uterine fœtus, as seemed probable. The periodicals, especially those of England, have detailed such cases, in which even injections of a more or less exciting character were employed.

The suspension of the catamenia, which, in this case, had continued nine months; the circumstances of the fancied conception; the sensations of the patient, and the shape of the abdomen, gave rise to the idea of extra-uterine pregnancy. As for the placental bellows sound, which is often a sign of pregnancy, it was so simulated in this case as to lead very experienced individuals into error; and the case may tend to show the uncertainty of this sign. It demonstrates, at the same time, that the bellows sound, which M. Paul Dubois has termed *uterine*, in his memoir on auscultation applied to pregnancy,[1] may depend on another cause than the passage of the blood into the spongy and erectile tissue of the uterus or placenta. It is presumable, moreover, that the sound heard in our patient was caused by the compression exerted by the encysted tumours on the great arterial vessels of the pelvis, or on the abdominal aorta.

This bellows sound—first called *placental* by M. de Kergaradec, who was one of the first to mention it,[2] and afterwards *uterine* by M. Dubois, because, from his experiments, it is not always met with in the direction of the placenta, but rather in different parts of the uterus, when the infant is even dead and putrified in the uterus; this sound has, doubtless, some analogy with the bellows sound in diseases of the heart, and with those that are heard in different parts of the circulatory system. But, according to M.

[1] Archives Générales de Médecine, tom. xxix.
Mémoire sur l'auscultation appliquée à l'étude de la grossesse. Paris, 1822.

Dubois, the phenomenon which makes the nearest approach to it is the sound of the aneurismal varix, and this comparison leads us to the following considerations which belong to our subject.

When we carefully examine the arrangement of the vascular apparatus in a uterus which has been recently, or still is, developed by pregnancy—and especially if we inject it with liquid or gas—we easily observe that the most ready, direct, and numerous communications exist between the arteries and the veins; the parietes of the uterus seem to be a true erectile tissue, or—to return to the subject of our comparison—the tissue of a natural varicose aneurism. The column of blood conveyed by the arteries, and divided in their branches, proceeds to mix itself, by passing directly into the veins, with the less rapid and crowded columns which these canals contain. This phenomenon is unquestionably the cause of the bellows murmur or sound, which is so remarkable in varicose aneurism; it is extremely probable that the same noise is produced in the adventitious erectile tissues; and, for the like reasons, why may not this be the case with the parietes of an organ composed, in great part, of an analogous tissue? Endeavouring, afterwards, to establish the value of the bellows sound as a sign of pregnancy, the author adds—"As the pulsations with the bellows sound are dependent upon the diffusion of blood in the vascular erectile tissue of the uterus, when it is developed, it is evident that, if the presence of the product of conception in the uterine cavity can alone determine the development of the vascular tissue of the organ, the pulsations with the blowing sound (*souffle*) are an incontestable evidence of pregnancy. We shall think so until it shall be demonstrated by facts, that causes foreign to pregnancy have produced the same results."[1] This, then, is one of those facts which contradict the most judiciously established points of theory, and hence we have esteemed it important to publish it. There was evidently in this female, suspected of being pregnant, a manifest bellows sound, which, it was believed, must be referred to the placenta, and which was taken by experienced individuals for a sign of pregnancy. We cannot account for this mistake in any other way than by admitting that the bellows sound, perceived, was caused by the compression of the encysted tumour on the abdominal aorta, or on one of its principal lower divisions—a compression which diminished the diameter of the artery; and hence the shock of blood circulating with rapidity against the parietes of the vessel, and the sonorous noise resulting from it.

[1] Mémoire sur l'auscultation appliquée à l'étude de la grossesse. Paris, 1822.

PERICARDITIS AND ANEURISM OF THE HEART.

Of the wheel sound (bruit de roue), the sound of the friction of new leather (frottement de cuir neuf), or of rubbed stuff (d'étoffe froissée); of the bellows sound (bruit de soufflet) in the cavities of the heart and in the arteries.

CASE I.

Symptoms of pericarditis—Wheel sound—Sound of friction of new leather or rubbed stuff—Death on the 26th day—Complete adhesion of the pericardium to the heart, by means of a false membrane.

Louisa Hunot, aged forty-two years, cook, of feeble constitution, subject to frequent rheumatic pains, which might be attributed to dwelling in a low, damp kitchen, was taken, on the 18th of June, 1834, with acute pains and swelling of the knees. Bleeding by the lancet and by leeches produced a speedy and salutary improvement; the patient was able to resume her ordinary occupations, but it was not long before she experienced fresh symptoms.

On the 26th of June, she had shivering and extremely acute pains in the præcordial region; the respiration was difficult and anxious. Two bleedings within a short time, and the repeated application of leeches to the left side of the chest, procured but little relief.

On the 2d of July, the patient was admitted into the hospital, where leeches were again applied to the præcordial region.

When observed on the following day, at the morning visit, she presented the following appearances: the face was deeply changed, pinched, and having the impress of deep suffering; yellow hue of the skin; emaciation; considerable anxiety; oppression; respiration panting; speech short and interrupted; very acute pungent pain in the præcordial region; dulness of the left side for a space of nearly five inches in diameter; sonorousness in the rest of the thorax; short dry cough, &c.

The pulsations of the heart communicated to the ear the sensation of the sound of a wheel (*bruit de roue*), and of frictions as if the organ were shaken in a fluid. Its movements of systole and diastole appeared to be confounded into one. Pulse small and frequent (140). (A blister to the anterior part of the chest; dressing with mercurial ointment; sinapisms to the limbs; lemonade.) Slight remission in the evening.

On the 4th of July, a little less anxiety; continuance of the other symptoms; *bruit de roue* and rubbing sound (*frottement*) very marked on the region of the heart. (Six cupping-glasses, with the scarificator to the præcordial region; continuation of the dressing with the blue ointment; for drink, gum water mixed with Seltzer water, absolute diet.)

On the 5th, less anxiety; respiration more easy; speech still short and interrupted; thirst violent; dysuria; pulse feeble and irregular; *bruit de roue*, and of rubbing (*frottement*); constipation.

(Gum water with Seltzer water; purgative clyster with senna and sulphate of soda; dressing for the blister as before.)

Evacuations copious during the day; marked relief; a little sleep. On the 6th, pulse frequent and more and more irregular (164); remission of the præcordial pain; the patient was obliged to remain in the sitting posture to breathe easier, and ward off the sense of suffocation, which was always imminent; she felt, on the left side of the neck, a motion and noise analogous to those of the ticking of a clock; the pulsations of the heart communicated to the ear a drier sound than on the preceding days. (Purgative potion, with castor oil and syrup of buck-thorn—of each an ounce; gum water with Seltzer water. Diet.) Intestinal evacuations copious; relief; general remission; sleep.

On the 7th, beatings of the heart isochronous with those of the pulse, which is less frequent than on the evening before (104); *bruit de roue*, and of *frottement*, very marked in the præcordial region, and resembling that which would result from rubbing a piece of taffety; respiration more easy; lying on the sides practicable, without suffocation: (same treatment; two broths—*deux bouillons*.) Diarrhœa; ten evacuations in the course of the day.

On the 8th, same state, excepting a pain at the right posterior portion of the chest, when the patient made a long inspiration. Pulse 104, equal and regular; same dulness as at first in the region of the heart: (same treatment; and, in addition, sinapisms to the feet.) Cramps in the left arm; insomnia; suffocation, obliging the patient to remain in the sitting posture.

On the 9th the pulse was less frequent (96); small dry cough; respiration interrupted; voice plaintive; slight subcrepitant rhonchus (*râle*) in the left side behind; some mucous sputa, &c.: (four cups, with the scarificator to the posterior part of the chest, on the left side; purgative clyster: toast and water, with Seltzer water: diet; dressing with mercurial ointment.) Three evacuations; insomnia; acute præcordial pain.

On the 10th, 11th and 12th, same state; symptoms of pneumonic catarrh persisting on the left side posteriorly, &c.: (toast and water; broth; the white looch;[1] same dressing.)

On the 13th, she took food secretly; agitation during the night; imminent suffocation; pulsations of the heart precipitate; pulse 145; crepitant rhonchus on the left side beneath the inferior angle of the scapula: (a blister to the præcordial region; sinapisms to the feet; toast and water; white looch; diet.)

On the 14th, tension of the abdomen; pain of the right hypochondrium; pulse very small, equal, and frequent (100): (toast and water; white looch; broth.)

On the 16th, ægophony at the inferior angle of the left scapula;

[1] The *looch album* of the Parisian Codex is made as follows: *amygdal. dulc.* ʒ ss.: *amygdal. amar.* No. ii.; *sacchari albi* ʒ iv. Make an emulsion by gradually adding ʒ iv. of water. Then take *pulv. tragac.* gr. xvi. *ol. amygdal. dulc. recent.* ʒ ss, *sacchar.* ʒ ii.: add the almond milk gradually to this, and afterwards *aq. flor. aurant.* ʒ ii.—*R. D.*

dulness at the two inferior and posterior thirds of the chest; dulness still in the præcordial region; pulse 96: (same treatment; broth.)

On the 17th and 18th, respiration very difficult; pulse 100; insomnia; urine scanty: (a blister to the right side posteriorly.)

On the 19th and 20th, slight amelioration in the general state of the patient; dulness a little less extensive: (toast and water, with Seltzer water.)

On the 21st, pulse quick, small, and unequal; pulsations of the heart more extensive, but so confounded as to make but one dry sound; lips livid; threatening of suffocation; præcordial anxiety; lipothymia; great change in the features; death in the night.

Necroscopy thirty hours after death. Thorax—Some miliary, isolated tubercles existed at the upper part of the right lung. The top of the left lung adhered strongly to the upper and posterior part of the pericardium. The left part of this membranous sac was adherent every where to the pleura costalis. Numerous adhesions were also observed between the right lung and the parietes of the chest. The heart adhered completely to the inner surface of the pericardium, in such a manner that there was considerable difficulty in separating them from each other; to accomplish this it was requisite to remove the heart from the sac that enveloped it, as we take an animal from its skin. The two membranes that constitute the pericardium were very thick, and could not be separated from each other. The heart was flaccid and larger than natural; the ventricles were dilated, and their parietes slightly extenuated.

Abdomen.—Considerable effusion of a yellowish, turbid, flocculent fluid. Some false membranes were observed, which formed adhesions between the convex part of the liver and the inferior paries of the diaphragm. The liver and spleen presented, in other respects, nothing particular. The intestines were slightly injected externally; they were not opened; nor were the head and vertebral column.

Dissection, in this case, exhibited evidences of three different diseases, although they were very analogous—to wit, pericarditis pleurisy, and peritonitis. The first was as extensive as it could be; the second was less so; and the third was only partial. The pericarditis should assuredly be placed in the first rank, and it was of this that she died: we had discriminated it and also the pleurisy during life. As for the peritonitis, which was in a part but little accessible to pressure, we had not suspected its existence.

Amongst the symptoms presented by this patient, we ought to note the peculiar sound of rubbing (*frottement*) heard in the region of the heart, a noise which appeared to us to resemble more the rubbing of a piece of taffety than that of a piece of new and dry leather. We shall recur to this phenomenon, which appears peculiar to inflammations of the serous membranes.

CASE II.

Pleuritic and præcordial pains—Nausea—Vomiting—Syncope—Palpitations—Sound of friction and of new leather—Death—Effusion into the pericardium—Adhesion of the lungs—False membrane on the heart and at the inner surface of the pericardium.

Alexander Pavier, aged twenty-eight years, merchant's clerk, of weak constitution, white skin and red hair, has undergone much fatigue, and committed great excesses. For two years he has been frequently indisposed; and has experienced indescribable uneasiness, nausea, and vomiting. For the last two months these symptoms have augmented, and, in addition, he has a pleuritic stitch in the left side, with difficulty of breathing.

Pavier entered the hospital on the 12th of March; on the following day he complained of the last mentioned symptoms; was pale, dejected, and tormented by thirst and nausea. The pulse was unequal and irregular; syncope from time to time; respirations thirty-eight in a minute; auscultation indicated a slight mucous *râle* under the right clavicle, with moderate vesicular expansion posteriorly; pulsations of the heart feeble, by no means extensive, irregular, and not isochronous with the arterial beats, but accompanied by a rubbing sound (*bruit de frottement*) difficult to depict by an exact comparison, but which slightly resembled what is termed the sound of new leather, or of a new saddle. The præcordial region was dull over an extent of five or six inches transversely. (*Treatment.*—Twenty-five leeches over the pained part, with three cups; pectoral tisane; mucilaginous looch.)

On the 19th, there was little improvement in the patient's condition; the state of the circulation and respiration had not changed; he vomited several times a bilious matter, by which he appeared to be relieved: speech and voice were much enfeebled.

On the 22d, the temporary improvement had disappeared; the difficulty of speaking and breathing was very great; the dulness, and sounds of the heart were the same; sometimes, after a fit of coughing, a sound of rubbing (*frottement*) was heard in the præcordial region; at others, one of air passing into a liquid: (fresh application of leeches with cups; sinapised cataplasms to the thighs.)

On the 24th the pulsations of the heart frequently changed their character; at times they were as above mentioned, with a feeble, rubbing sound; at others, there was merely a confused sound, and at others, again, a scarcely percepticle murmur. At times, he was affected with syncope and diarrhœa.

On the 30th, Pavier became more and more debilitated, so that he could only speak in a low and interrupted voice; the pulse was "miserable," and extremely irregular. He could lie only on the left side, and could breath with some ease only when he suspended his right arm by the wrist, over the fold of a handkerchief tied to the top of the bed. He died on the 2d, at two o'clock, P. M.

Necroscopy twenty-four hours after death.—When the chest was opened, the pericardium was observed greatly developed and

full of liquid, occupying the circumscribed space over which the dull sound was heard during life as well as on the dead body. Its right margin corresponded to that of the sternum, and its left extended two or three inches beyond the corresponding margin of that bone, a distension which crowded the left lung backwards. This lung was adherent in some parts to the ribs, by old cellular attachments (*brides*). The right lung was also adherent by cellular fibres organised into membranes, and leaving no space between them.

The pericardium had the shape of the heart; it was eight inches long and six broad. It adhered to the lungs at the sides and behind. Its outer surface was injected by a multitude of vessels, which crossed in every direction. The distended sac offered considerable resistance to compression, and contained about a pint of bloody fluid. The internal surface of the pericardium presented every where inequalities and asperities more or less developed, according to the place in which they were examined: thus they were very prominent at the posterior part of the heart, and might be compared to the intestinal villi of the ox. At the anterior part of the two layers, the asperities were smaller and harder; near the apex of the heart, and at the corresponding part of the sac, they were worn down, as it were, yet rugous. Except the posterior part of the two layers, which was of a deep red, the pericardium was of a rosy white colour. As regarded colour, texture, and the sensation communicated to the finger, the heart, anteriorly, might be compared to a calf's tongue. It was adherent to the pericardium only at its upper part, by means of some soft false membranes, which were reflected over the origin of the large vessels. All the villosities and asperities, of which I have spoken, were seated in an adventitious membrane, intimately adherent to the pericardium, from which it was impossible to separate it. The texture of this membrane was almost fibro-cartilaginous; its thickness was from one to two lines, according to the different parts which it occupied. The top of the lungs contained some cretaceous tubercles; their posterior part was softened and gorged with a bloody and frothy fluid. The stomach was greatly dilated, and its inner surface variously coloured; the anterior part of the mucous membrane was wasted (*usée*) without being softened; the posterior part was slate-coloured, and reducible into *bouillie* by the least friction; the two portions of the stomach were separated by a clear line of demarcation. The mucous membrane of the intestines was red and ulcerated in one part, at the end of the small intestine.

CASE III.

Violent blow with the pole of a carriage—Oppression—Palpitation—Œdema of the lower extremities—Bellows sound in the heart and arteries—Death—Hypertrophy of the left ventricle—Cartilaginous transformation of the sigmoid valves.

John Louis Cordier, locksmith, aged fifty-two years, was received into the Hôpital La Charité on the 31st of June, 1833, under the care of M. Rayer.

This man, who was of delicate constitution, irritable, and had been subjected for many years to a monthly hemorrhoidal flux, received, in 1829, a violent blow, from the pole of a carriage, on the anterior and upper part of the chest. At this period, he felt slight oppression, which increased when he made any extraordinary effort. About 1832, palpitations were added to the oppression, which had attained greater intensity, and returned in paroxysms. He had not, however, discontinued his daily labours; and it was not until six months before his entrance into the hospital, that the violence of the symptoms compelled him to inaction: his limbs were infiltrated. Decoctions of the root of asparagus, and of the *triticum repens*,[1] with nitre, were used with some success for the œdema. Two bleedings afforded no relief.

When he presented himself at the hospital, he was in the following state: puffiness of the face, especially of the right side; slight infiltration of the dorsal surface of the hands; considerable œdema of the lower part of the lower limbs; impracticability of lying on the back; oppression; constant sense of suffocation, augmenting by paroxysms, and often preventing him from sleeping; chest sonorous, except in the præcordial region; respiration pure and strong, especially at the posterior part; cough slight; expectoration moderately abundant, with thick, yellowish and mucous sputa.

When the præcordial region was percussed, a dull sound was rendered, especially at the lower part; the pulsations of the heart were evident to the eye; the application of the cylinder (the stethoscope,) gave the following information: strong impulse; the first sound of the heart, the ventricular sound, corresponding to the pulse, dull and not much lengthened; absence of the second sound —the clear sound—replaced by a very strong bellows sound, which, commencing at the base of the heart, ascended along the sternum, towards the upper extremity of which it grew stronger. On listening attentively about the lower part of the sternum, a double bellows sound was heard; the one appearing isochronous with the pulse, the other succeeding it: the carotids and subclavians were agitated by sudden pulsatory movements, very visible, isochronous with the pulsations of the heart, and presenting, besides, a very remarkable murmur (*bruissement*) when the finger was lightly applied to them. The ear likewise perceived a very marked bellows sound there. If the patient raised the upper extremities, the skin was violently elevated in the course of the brachial, ulnar, and radial arteries, whose flexuosities were remarkably increased. The pulsations were less energetic when the limbs hung along side the trunk; the pulse was full, strong, vibratory, and beat eighty-nine times per minute. The pulsations of the arteries of the lower limbs were only perceptible at the upper part of the thighs; and the bellows sound heard there, which might be produced by the compression of the cylinder, was isochronous with the pulse. The fourth right intercostal space, at an inch from the sternum, pre-

[1] See note to page 90.

sented a very circumscribed pulsation, to the extent of a finger's breadth, and a very marked bellows sound : it was scarcely possible to believe in any aneurismal dilatation of the artery creeping there; its branches were too small ; the pulsation too intense and too circumscribed to admit of this diagnosis : the physician (M. Rayer) thought, that there was a lateral aneurism of the aorta in form of a *cul-de-sac*, the bottom of which was opposite the space that separates the fourth from the fifth rib of the right side. It was impossible to diagnosticate with more sagacity, as will be seen from the necroscopy.

During the twenty-four days which the patient passed the first time in the hospital, they were able several times to verify the symptoms enumerated above; the pulse preserved its force and fulness, and only varied a few pulsations in frequency. He was not bled : at the end of four or five days he was put on three quarters' allowance of food, and on the use of a tisane made of horse radish. Perfect rest allayed the oppression ; there was a little sleep during the night; the cough was not urgent; the expectoration by no means copious ; the œdema gradually disappeared, and the improvement was so marked that Cordier demanded his dismissal on the 28th of July.

On readmission on the 2d of September, he had the same series of symptoms as those mentioned : the præcordial region was the seat of constriction and of considerable effort ; he could not rest on the back; the only supportable posture was the sitting, and even in this he experienced inexpressible anguish, with constant threatening of suffocation. In other respects, auscultation afforded the same evidences—bellows sound in the aorta, carotids, and subclavians ; pulsations visible ; pulse ninety-two, strong and vibratory; rhonchus at the posterior and right part of the chest ; expectoration of a thick, copious, yellowish mucus ; œdema of the lower limbs. Rest did not ameliorate these symptoms; they continued with intensity until death, which took place on the 14th of September.

Necroscopy twenty-six hours after death.—Slight cadaveric rigidity ; serous infiltration of the inferior limbs, especially at their lower part; the pericardium contained only a small quantity of serous fluid. The heart was of considerable size, the increase depending almost wholly on the left ventricle ; its cavity was augmented, and its hypertrophied parietes were nearly an inch thick; the auriculo-ventricular valves—right and left—were healthy.

The right part of the aorta, at an inch below its insertion into the heart, presented a pouch, shaped like the finger of a glove, of the thickness of the thumb, and fourteen lines in length ; the bottom of this pouch was adherent to the inner surface of the reflected layer of the pericardium.

If water was poured into the aorta, it entered the left ventricle; the sigmoid valves left between them a triangular separation, whose base was eight lines long, and which became smaller and smaller towards the summit ; and if the area of the triangle be calculated, by multiplying its base by half its height, (nearly four

lines,) we have an opening of thirty-two square lines, by which the blood was able to reflow into the heart during life. These valves were thick; their edges straight, and the tubercles of Aranzi effaced; they were transformed into a tolerably firm elastic tissue, very similar to cartilage. When the finger was introduced into the aorta from the ventricle the valves could readily be arranged, when they left between them a space which, during life, could present no obstacle to the reflux of the blood.

Above the right sigmoid valve there was in the aorta a perfectly circular aperture, four lines in diameter, which communicated with the small pouch mentioned above; the external coat of the artery alone seemed to constitute its paries.

The inner surface of the aorta was studded here and there with yellowish patches, lying under the membrane, which was pale and firm; the brachio-cephalic trunk, the subclavian arteries, the carotids, and the axillaries, were larger than natural; in other respects they showed no alteration of tissue. The brachial, ulnar, and radial arteries were remarkably tortuous. Excepting the hypostasis of blood at the posterior part of both lungs, the other organs presented no perceptible alteration.[1]

CASE IV.

Pulsations of long standing—Dyspnœa—Intermittent bellows sound—Death—Passive dilatation of the cavities of the heart—Sigmoid valves of the aorta wholly ossified.

A man, aged seventy years, lean and decrepid, was admitted at the *Clinique* of La Pitié, on the 2d of November, 1832; he had suffered for several years under irregular and tolerably strong palpitations, accompanied with dry cough, with very great oppression, increased by going up any ascent.

Almost every part of the face, and particularly the lips and tongue, were livid; auscultation did not at first exhibit the existence of any abnormal sound in the præcordial region; percussion did not present any thing remarkable; the pulse was frequent, but regular; there was a little catarrhal cough, but soon there supervened an evident constraint in the circulation, for which a large application of leeches was made to the anus, followed by a tartar emetic plaster between the shoulders.

On the 8th, the patient, in spite of the use of these agents, was in a state of remarkable anxiety; the face was livid; the jugular veins distended; the pulse small and irregular, and, in the præcordial region, the bellows sound could be heard. These symptoms were relieved a little: it appeared, indeed, that the bellows sound ceased for a moment to recur subsequently, an alteration which took place several times during the day. Recourse was had to the use of the tincture of digitalis, and sinapised foot baths; the patient was momentarily relieved, but he died a few days after.

[1] Guyot, De L'insuffisance des Valvules Sygmoïdes Aortiques. Thèse; Paris, 1834.

Necroscopy.—The body was in a state of remarkable emaciation; he was devoid of penis; a cicatrix announced that the organ had been amputated; the intercostal cartilages were ossified; the pericardium was almost wholly covered by the anterior edge of the lung: it contained a little serosity; the heart presented an augmentation of size by more than a third at least; the right cavities were distended, and thin; the auricles and left ventricle presented the same disposition; the septum between the ventricles was of little consistence; the sigmoid, the tricuspid, and bicuspid valves were sound; the three sigmoid valves of the aorta were entirely ossified. One of them was arranged *en panier de pigeon*, as we say, and projected into the cavity of the aorta; its extreme density did not permit it to approach the parietes of that artery. The two other valves, on the contrary, which were also ossified, were adherent to the arterial parietes, and could not be separated from them. It is manifest from this disposition, that two thirds of the caliber of the orifice of the aorta were constantly free, and that the other third was always occupied by the projection formed by one of the three sigmoid valves. The ascending aorta, and the substernal curvature of that artery presented numerous patches (*plaques*) of ossification. The lungs were gorged with mucus; the pia mater was infiltrated with a little serosity, and one or two small spoonfuls were effused into the lateral ventricles. The digestive apparatus presented nothing remarkable.[1]

CASE V.

Palpitations—Menstrual suppression—General infiltration—Bellows sound—Cat sound (*bruit cataire*)—Expectoration of blood—Death—Serous effusion into the chest and abdomen—Hypertrophy of the heart—Fibro-cartilaginous degeneration of the tricuspid valve.

A washerwoman, aged twenty-four years, complained of palpitations, and sensible diminution in the quantity of blood which she commonly lost at her menstrual periods; the catamenia at length stopped altogether. Some months after, the abdomen swelled, and general infiltration supervened, which caused her to enter the Hospital Beaujon, on the 24th of August, 1832.

Face pale; general infiltration of the subcutaneous cellular tissue; respiration difficult; cough; expectoration mucous and bloody; dull sound at the inferior and anterior part of the left side, which diminished above when she was made to lean to the right; pulsations of the heart obscure, and dull at the middle part of the præcordial region; bellows sound, which sometimes approximated the *bruit cataire;* pulse hard and contracted—giving 112 beats in the minute; abdomen distended, but indolent, with fluctuation; diminution of urine, &c. (Bleeding at the arm; digitalis purpurea, in the dose of half a grain, morning and evening, associated with iron filings, in an increasing dose.) The bellows sound, mentioned

[1] Extract from the *Journal Hebdomadaire de Médecine et de Chirurgie.* Tom. ix. 475. Case by M. Martin Solon.

above, diminished, but augmented some days afterwards; the elevation and diminution of the pulse followed the same variation, with the difference of about 20 pulsations per minute.

On the 17th, expectoration rusty; pulse irregular; pulsations of the heart tumultuous; oppression stronger. (Bleeding to ten ounces.)

On the 18th, respiration more easy; expectoration less rusty; beatings of the heart less tumultuous; increase of the difficulty of breathing; death.

Necroscopy.—General infiltration of the subcutaneous cellular tissue, accompanied with collections in the serous cavities, which had been detected during life; a great portion of the left lung was infiltrated with bloody serosity, and was the seat of a kind of hepatisation. The size of the heart was increased one third; its cavities were very large; the parietes of the ventricles were of almost equal thickness; the left being a little extenuated, and the right slightly hypertrophied, as well as the ventricular septum. The arterial orifices presented nothing remarkable; the tricuspid valve had on its internal surface, between its insertion and its fringed margin, an annular vegetation of fibro-cartilaginous density and white colour, two lines high, directed towards the auricle, and easily lacerable under the efforts of the finger. By this arrangement, the valve formed a circular aperture two or three lines in diameter, constantly open, and which, whilst it did not prevent the entrance of the blood from the auricle into the right ventricle, permitted its reflux from the ventricle into the auricle. On the mitral valves there were some vegetations of the same nature, of the size of hemp seed, developed on the fringed margin of the valves. The other organs exhibited nothing remarkable.

CASE VI.

Palpitations—Sense of suffocation—Infiltration of the extremities—Weak bellows sound, some days before death—Dilatation of the left ventricle and auricle—Encysted tumour, in a state of suppuration, in the left auricle.

Jane Fèvre, aged 28 years, seamstress, of feeble constitution, had been subject for a long time to palpitation, sense of suffocation, and transient swelling of the feet. She had already been treated in several hospitals, when she entered the Hospital Necker, on the 24th of August. She presented herself to our observation in the following state:—respiration very difficult; imminent sense of suffocation, which obliged her to remain seated in bed, the head supported by pillows; pulsations of the heart feeble, extensive, without impulsion, and without abnormal sound—more marked to the left than to the right of the præcordial region; pulse regular, but feeble, and little developed, giving from 90 to 100 beats in the minute.

Her state varied little during the fifteen days which she passed in the hospital; except that the respiration appeared more and more difficult and embarrassed, and the pulsations of the heart more

tumultuous, with a slight bellows sound, which did not seem to have existed at the time of her entrance into the hospital. She died on the 6th of September, at eight o'clock in the morning. I had written on the book of diagnosis—*Aneurism of the left ventricle, with dilatation of the ventricle and auricle of the same side, without hypertrophy.*

Necroscopy.—General anæmia, with some cadaveric sugillations at the posterior part of the chest; skin fine and glossy; a little œdema of the abdomen and calves of the legs. The two sides of the chest contained considerable effusion—the right a quart, and the left about three pints. The lungs were pressed upon by this fluid: the right was crepitant in the greater part of its extent; the left presented, at the middle of its anterior surface opposite the heart, a patch, two or three inches in size, of red pulmonary tissue, hard, altogether impermeable, and infiltrated with blood, which did not flow out either by incision or by pressure, and which seemed to be combined with the parenchyma. This patch, which occupied almost the whole thickness of the lung, and had all the appearance of liver, was plainly circumscribed, and wholly distinct from the rest of the organ: it appeared to us to be the result of chronic pneumonia.

The pericardium contained a little citron-coloured serum. The heart was pale, flaccid, somewhat large, and sunk down into the shape of a birding-pouch (*en forme de gibecière*). The right cavities were in a sound state. The left ventricle was as large as the right, and the thickness of their parietes was the same. The mitral valves were hard and cartilaginous; and, when applied back to back, two small apertures resulted, of the size of a quill, separated from each other by the tendon of the internal valve. The left auricle was greatly dilated, and could have contained a large hen's egg; it inclosed some black blood, and a kind of *champignon* or fungous growth of a red colour: the form of this body cannot be better compared than to that of the *Lycoperdon*, commonly called *vesse-de-loup* (*puff-ball*). This fungus had no pedicle, but was feebly adherent to the inner surface of the auricle, from which it could be separated without any force. It was situated at the left upper part of the auricle, which presented, at the point of adhesion, inequalities that appeared to have served for a kind of incrustation. This species of tumour, *quasi* free in the auricle, was more than an inch in diameter; it had a central cavity communicating with others of smaller size, filled with a reddish, manifestly purulent, fluid; it was of fibrinous appearance, and hard and coriaceous, except at the point of adhesion, which was a little softened. The pulmonary veins were dilated and filled with black blood.

This case is not simply remarkable in respect to the lesion of the mitral valves, which reduced the auriculo-ventricular orifice to two apertures of less than a line each in diameter, and by their insufficiency offered an obstacle to the circulation; it also presented a tumour floating, as it were, in the left auricle—a tumour

which was probably formed originally by a clot of blood, which had afterwards become the centre of an inflammatory process, and a suppuration in which the auricle had taken no part. This fungus presents, then, a rare example of disease of the blood, which is susceptible, it seems, of becoming the seat of different changes as yet but little determined. From the appearance of the parts, it was impossible to establish any relation by continuity between the inner surface of the auricle and the tumour; the latter was simply agglutinated to it, but was not attached to it by any pedicle.[1]

CASE VII.

(Abstract.)

Crebot, aged fifty-three years, turner, residing at Mewdon, entered the hospital on the 5th of November, 1833. There was written in the book of diagnosis—*Dilatation of the left ventricle of the heart; bellows sound at the first normal sound of the heart.* The disease had existed seven months, and was dated from a violent fit of rage. There was, moreover, hypertrophy of the liver, which extended below the ribs. On opening the body, the left ventricle was found hypertrophied and dilated; the arch of the aorta was also prodigiously dilated, and covered with a membranous layer of adventitious cartilage. This cartilaginous degeneration was also remarked in the periphery of the auriculo-ventricular orifice. The right ventricle was likewise hypertrophied. There was a pretty considerable quantity of water effused into the chest. The liver was also hypertrophied, and its tissue softened.

CASE VIII.

(Abstract.)

Dains, aged 48 years, wine merchant at Vaugirard, entered the hospital on the 8th of December, 1833, in a very advanced stage of disease of the heart, with excessive oppression and infiltration of the lower extremities. He died on the 11th, three days after admission. In the book of diagnosis was written—*Active aneurism of the left ventricle, with hypertrophy and dilatation; contraction of the auriculo-ventricular orifice, and ossification of the mitral valves.* There was a very distinct file sound (*bruit de lime*) at the first normal sound of the heart. On opening the body, the heart was found so large as to be an object of astonishment to the assistants. The left cavities were dilated, and hypertrophied in proportion. All the periphery of the auriculo-ventricular orifice had passed to the state of fibro-cartilage; the extremities of the mitral valves were ossified so that they could not be joined; they were, consequently, remarkably inadequate for their functions.

[1] For an interesting case of fibrinous concretion in the heart, caused perhaps, in the first instance, by obstacle to the circulation in the lungs, see the "American Medical Intelligencer" for July 1, 1837, p. 125.—*R. D.*

The two cases of pericarditis, which we have related at the commencement of this memoir, presented, with some modifications, a phenomenon of great importance, and which may be considered hereafter as a certain sign of inflammation of the serous covering of the heart—a disease hitherto regarded as very obscure. This sign consists in a sort of rubbing (*frottement*), which has been compared, by some, to the noise made by a new saddle, or more simply to new leather when rubbed or worked (*mis en œuvre*); by others, to the rubbing of a piece of taffety, or rather to the noise of a small wheel in motion. It may likewise present, more or less distinctly, the characters of the rasp (*râpe*) or bellows sound, produced by ossification or insufficiency of the cardiac valves. We are of opinion, that the variations occasionally observed in the same patient, at different periods of the disease, are owing to very different causes—such as the nature of the false membrane which is formed in pericarditis; its extent; the presence and quantity of serosity effused in consequence of the inflammation; the more or less rapid progress of the inflammation, &c. This rubbing sound —the result of the sliding of the inflamed serous surfaces of the heart and pericardium on each other, when, having become irregular and covered with coagulable lymph, they are no longer bathed with the product of the natural exhalation; this rubbing sound, we say, has not been the object of sustained researches, although Laënnec had pointed it out long ago, and the insufficiency and uncertainty of the signs of pericarditis had been admitted. But perhaps we ought to attribute, to that distinguished pathologist himself, the little anxiety that has been felt by physicians to confirm this important phenomenon; for, after having pointed it out and compared it to the creaking of the leather (*cri du cuir*) of a new saddle under the rider, he adds—"*I for a long time thought that this sound might be a sign of pericarditis, but I have since satisfied myself it is not.*"[1]

In consequence of this belief, he made no mention of it in the article pericarditis of his second edition. Some of his pupils, and especially M. Collin, assert that they have since met with it, and M. Meriadec Laënnec, author of the third edition of the work of his cousin, published in 1831, seems to have no doubt as to the reality of the sign, which "new facts," says he, "will one day confirm."[2]

From this detail, the reader will be enabled to appreciate the memoir published by an English physician—Dr. Stokes[3]—and the degree of originality of a work which is, in other respects, so estimable. That author, who has collected several facts which serveas a basis for his memoir, constantly uses the word friction (*frottement;*) in the majority of cases it is certainly the most accurate, although it is proper to say that, in certain circumstances, the comparison

[1] Traité de l'Auscultation, tom. iii. p. 64, 2d edit.

[2] Tom. iii. p. 262, note.

[3] Researches on the Diagnosis of Pericarditis, by W. Stokes, of Dublin, in the Journal of Medical and Chemical Science; 1833.

with the sound of new leather is more correct; thus, in a case which has been communicated to me by Dr. Clémanceau, of apparent pericarditis, that accurate observer assured me he had distinguished, three days before the death of the patient, (who unfortunately was not opened,) a sound of new leather so marked, that he thought he heard—to use his own language—a diminutive sound of that creaking of new boots produced when the leather is dry, and the wearer walks or ascends the stairs.

This sound, as might well be conceived, is in an increased ratio with the dulness of the præcordial sound that results from the effusion of fluid into the pericardium, because the fluid prevents the friction of the irregular and inflamed surfaces—a peculiarity well established in our second case, as well as by Dr. Stokes: he cites, indeed, several cases where the gradual disappearance of the rubbing sound could be distinctly traced as the disease made progress; and where the sound (*bruit*) returned with the return of the sonorousness.

Dr. Stokes is of opinion that the rubbing sound, whatever may be its form, may be esteemed a sign of pericarditis in the following circumstances. *First;* when it appears suddenly,—a disease of the valves not producing so promptly an intense rasp sound (*bruit de râpe*). *Secondly;* when it is accompanied by a tremor (*frémissement*) sensible to the hand. *Thirdly;* when it is rapidly displaced according to the progress of the inflammation. *Fourthly;* when it accompanies the two sounds of the heart, in cases where there had previously been no sign of disease of that organ. *Fifthly;* when it disappears under the treatment, and does not return when the heart is excited. *Sixthly;* when it is perceptible over a small space only even when very strong.

As this subject is one of great moment, and as the essay of Dr. Stokes is only known in France by an extract inserted in the *Archives Générales de Médecine*,[1] we may transcribe the following propositions, although perhaps premature, which conclude the memoir on pericarditis.

1. In pericarditis, with exudation of *plastic lymph*, the friction of the two irregular surfaces produces a peculiar sound perceptible to the ear, and a vibration sensible to the hand, which distinguish the disease in the absence of every other symptom.

2. The more irregular the surfaces of the pericardium, the more distinct are the symptoms.

3. The rubbing sound accompanies both sounds of the heart in almost every case.

4. Generally it is perceptible only in the præcordial region.

5. It occurs with different modifications, but frequently resembles the sound produced by advanced disease of the valves of the heart.

6. It is most distinct when the region of the heart gives a clear

[1] Tom. iv., second series.

sound on percussion; but the existence of fluid in the pericardium does not necessarily imply its total disappearance.

7. It may recur after the absorption of the fluid contained in the pericardium, or on the renewal of the inflammation.

8. The rubbing sound may be manifested when the tremor is no longer perceptible by the hand.

9. It is rapidly and markedly modified by a direct antiphlogistic treatment.

I have twice heard the rubbing sound in peritonitis, by auscultation of the abdomen; but as the patients were cured, the rigorous demonstration of the existence of the sound, as a sign of inflammation of the peritoneum, was wanting. It appears, by the way, that this sign has frequently been detected at the Hospital Cochin by one of the physicians, and an *interne* of that establishment.

Most of the sounds of the heart, of which the cases we have related present examples, have exercised the sagacity of the physiologist and the physician, who have strenuously endeavoured to appreciate the cause of the phenomena, and to obtain, at the same time, a valuable means of diagnosis. But this point of etiology is difficult of elucidation, inasmuch as the diseases of the heart, in which the abnormal sounds of which we have spoken are observed, only become dangerous and fatal after the lapse of a long period, in which the patients are often lost sight of; or else, after having been in several hospitals, they enter another to die, under which circumstances sufficient information cannot be obtained respecting their state. We have constantly in the Hospital Necker a goodly number of persons labouring under disease of the heart, and yet we are rarely able to obtain complete histories, and they frequently quit the hospital to die elsewhere.

Laënnec believed he could account for certain abnormal sounds of the heart, such as those of the rasp, bellows, &c., by the contractions of the fibres of that viscus; which, according to the delicate and minute observations of certain physiologists, produce a kind of sonorous and snoring thrill, (*roulement sonore et ronflant*,) similar to that made by a body in rapid rotary motion. The author was, however, governed by a kind of prepossession, which led him to eschew every kind of physical comparison, even that resulting from experiments which he had made by injecting water into the hose of a fire engine; the noise of the fluid injected being, according to him, a thrill (*frémissement*) in no respect comparable to the phenomena of the organism; and when pressure by the hand on these tubes augmented the sound, or gave it another character, he attributed this change to the contraction of the muscles of the hand, and not to the shock of the fluid. This theory was soon compelled to give way to one more natural, and that falls, we may say, under the senses—which consists in explaining the abnormal sounds of the heart by the shock of the blood against the parietes of the organ, or the friction of that fluid in passing through the narrow spaces produced by organic lesions of the auriculo-ventri-

cular or sigmoid valves; lesions which at times greatly diminish the cardiac and arterial orifices.

At a later period, M. Bouillaud, to whom the theory of the abnormal sounds of the heart and arteries is indebted for many researches, admits that three circumstances might influence the development of these sounds: *first*, the augmentation of the motive force of the heart; *secondly*, narrowness of some part of the canal which the blood has to traverse; *thirdly*, the inequality or irregularity of surfaces, usually smooth and polished, which are in contact with that fluid.

A Scotish physician, Dr. Corrigan[1]—designating by the term *insufficiency* or *incompetency* that state of morbid alteration, in which the valves cannot close exactly the cardiac orifices, cut off the column of blood and prevent its reflux—explains the bellows sound by such insufficiency. This new term is far from expressing a new idea, yet it has received favour amongst us, and the change which it characterises has become an object of unceasing study. A young physician, whose name has already been mentioned—M. Guyot—has recently consecrated a good thesis to it, the materials for which have been collected in the wards under the care of one of those Parisian physicians who cultivate the science of medicine with most ardour—M. Rayer. According to M. Guyot, as we do not meet with the remarkable phenomena pointed out by Dr. Corrigan in every case of insufficiency of the valvular apparatus, two categories must necessarily be established:—the one comprising the cases in which the valves are so impregnated with calcareous salts, that they can no longer be raised at the time of the systole, and form an immovable floor, in the centre of which a narrow fissure only exists,[2] through which the blood can escape,—and the *latter* including every case in which the aortic valves, allowing of a reflux at the time of the diastole, are raised to a certain extent against the parietes of the aorta, when the systole of the ventricle is effected, and thus present a free passage to the blood. The third and fourth cases must be ranged in that category. From later researches, made at the Hospital La Charité, on this difficult topic of diagnosis, it has been deduced that the insufficiency of the auriculo-ventricular valves produces the bellows sound at the first normal sound of the heart, whilst that of the sigmoid valves produces the same bellows sound at the second normal sound of the heart.[3] They have, consequently, gone farther than Dr. Corrigan in establishing the insufficiency of the valves of the auriculo-ventricular orifice, of which we have reported an example: (see the sixth case.) As regards the mechanism of the bellows sound owing to insufficiency of the valves, we can scarcely attribute it to any thing but the friction exerted by the blood when it reflows

[1] Edinburgh Medical and Surgical Journal.

[2] This is the very rare subject of our sixth case.

[3] Letter of M. Littre on the sounds of the heart. *Gazette Médicale de Paris;* Sept. 13, 1834.

against the morbid sigmoid valves, the aorta, and the large trunks that arise from it.

Many experiments have been made to explain and demonstrate, by means of analogy, the rubbing sound, which may be caused by the blood under certain circumstances, in passing along the vessels. M. Pelletan, for example, has discovered experimentally that when a fluid moves with any velocity whatever in a canal which has a polished surface, no kind of sound can be heard externally; but if, on the other hand, the inner surface of the canal is unequal or irregular, or if it has prominences in it, a noise of a peculiar kind is heard, analogous to a murmur or roaring, (*bruissement*,) which certainly greatly resembles the bellows sound.[1]

On the other hand, M. Magendie, adopting another method for explaining the physiological sounds of the heart, has endeavoured, in a memoir read to the Institute, to establish that these phenomena are owing, not to the displacement of the arterial valves, but to a double shock of the heart against the parietes of the thorax; one of these produced by the apex of the organ at the time of the contraction of the ventricle; the other by the anterior surface, at the moment of their dilatation.

The author has not yet published the part of his memoir which treats of the abnormal sounds of the heart; but it may be anticipated that he will not agree with those who explain the bellows, rasp, file, and saw sounds, &c. by the friction of the blood against the mitral and sigmoid valves, when ossified, contracted, and not closing perfectly, as he sets out with denying that in the physiological state the physical action of the blood on the cavities of the heart, the valves, and arterial trunks, is appreciable to the ear.

M. Bouillaud, however, has affirmed, in a letter to the *Académie des Sciences*, that he obtained results opposite to those of the celebrated physiologist of the Institute;[2] and, in a second letter, he has forcibly combated the ingenious theory of M. Magendie, concluding that he could not give a more satisfactory account of the abnormal sounds of the heart than that which he had detailed in his first letter, which places the cause of the *tictac*, or double sound, in the play of the valves, and the passage of the blood through the orifices of that organ.[3]

M. Piorry, whose zeal for science is so well known, has undertaken numerous experiments to remove all doubts regarding the physiology and pathology of the pulsations of the heart. He took a simple injecting syringe, by means of which he established a current of water by jets in an incompressible pipe; by the stethoscope applied to the tube, the assistants heard a sound analogous to that produced by blowing into the hands; the stronger the stroke of the piston, the more intense the sound, and yet the inner surface of the pipe was continuous and without any roughness. The same experiment was made on the vena cava inferior, in the dead

[1] Lancette Française; Dec. 18, 1832.
[2] Journal hebdomadaire de Médecine.
[3] Ibid. t. iii. No. 36, p. 268.

body; and when a current of water was made to enter the lungs by the pulmonary artery, by auscultation the passage of the fluid was heard to be attended by a sound analogous to that heard in the cavities of the heart during life. The experiment was also performed on the pulmonary veins through the left heart, and with the same result. The character of the sound varied, according to inappreciable circumstances, from the blowing (*souffle*) to the hollow (*sourd*) sound; the stronger the force of the piston, the more marked the sounds, &c.

These experiments were repeated, the sternum being removed, but with no remarkable change in the results. Both sides of the heart were injected at the same time; a ligature, gently drawn, was placed on the aorta near the heart, so as to diminish its capacity, by rendering the inner surface of the artery rugous, and to offer greater resistance to the passage of the fluid. The bellows sound was extremely marked, especially opposite the narrow portion of the artery. Other similar experiments, made by the author in the course of the aorta, convinced him that the sounds heard in the arteries may occur without there being any contraction in the vessels, but that any contraction increases the intensity of the sound.[1] The conclusions to be deduced from these experiments are easily laid down, but they are opposed, in many respects, to those drawn by MM. Pelletan and Magendie, from other experiments instituted with the same object. M. Piorry does not say so; but our duty as historians obliges us to make the remark.

After perusing what we have just stated, we cannot but deplore the fate of physiological experiments in this question as in many others. M. Bouillaud formally contradicts M. Magendie; M. Piorry obtains different results from M. Pelletan; and, what is still more unfortunate, M. Piorry, armed with those results of his experiments, which he even compares to the works of nature, does not appear to us to agree entirely with M. Piorry, the physician to La Salpêtrière, who visits two hundred patients a day, makes a number of dissections, and does not find the bellows sound in one of twenty cases, in which there was, notwithstanding, ossification and narrowness of the orifices of the heart; yet these individuals were in conditions similar to those of the subjects of his experiments! It is, doubtless, not the fault of Piorry that the consequences are not more rigorous, but the fault of a subject beset with difficulties. For ourselves, making abstraction of all the experiments which we have not made, and which appear so fallacious in the absence of life, and with such different feelings on the part of the experimenters themselves—if we refer to our own cases and dissections, we shall not hesitate to regard the abnormal sounds of the heart as the result of contractions of its cavities, and of the arteries that arise from them, as well as of ossification of its valves, whether insufficiency (*insuffisance*) may or may not be present; and the exceptions that may be adduced against this mode of viewing the

[1] Archives Générales de Médecine. June, 1834.

matter, if they do not confirm the rule, cannot at least weaken it. If, then, we are told that the bellows sound is rarely heard in the old women at La Salpêtrière—who, notwithstanding, exhibit valvular ossifications and contractions of the cardiac orifices after death—we may reply, that this is the effect of age; that in these old and worn-out individuals the heart has not a sufficient degree of energy to impress the necessary rapid motion on the blood, and to produce the friction, which is its immediate consequence. To this cause must be attributed the feeble intermittent sound mentioned in our fourth case, the subject of which was seventy years old, and exhausted by excesses and misery. Although we are far from denying that the bellows sound may be the result of some other cause than that which the shock or friction of the blood in the cavities of the heart and the vessels produces, we must say that we have never observed the bellows, file, rasp, or saw sound, without ossifications and contractions of the vessels being present after death to account for those abnormal sounds.

It must be admitted that it is more difficult to explain the "devil sound" (*bruit de diable*), heard in the arteries of certain females who have not menstruated and are chlorotic—a sound which resembles less the bellows sound of the heart than is asserted. We believe, however, that the curvatures and ramifications of the carotids and iliacs have much to do with the production of that wheel sound (*bruit de roue*), which is so striking when the stethoscope is applied along the carotids of young females labouring under chlorosis and amenorrhœa; and with the more reason, as this state of disease is always accompanied by excitation of the heart, whose pulsations project the blood with greater force towards the head.

There is another peculiarity, which, it appears to us, ought to concur powerfully in the production of this phenomenon: this is the diminution in the quantity of blood, which certainly exists in those who are chlorotic, and in whom nutrition is feeble and hæmatosis languid. I may deceive myself, but it seems to me that the blood, being in less quantity, must run through the vessels with more rapidity, and give rise to more friction. Does it not frequently happen that the pulse is more rapid after blood-letting, which must have diminished the quantity of the circulating fluid? In support of the explanation given here, we may invoke the experiments made by Hope on dogs. Having laid it down, that, when accidental sounds occur in the heart and arteries, there is increase of friction *dependent upon a change in the circulation*, he expresses himself thus:—Eight or ten dogs were bled more or less frequently from one to ten times, and at intervals of from twenty-four to seventy-two hours. The results were, that the day after the first or second bleeding, carried to eight or ten ounces, the sound of the systole of the heart, previously strong and clear, was accompanied by a bellows sound; the impulsion was increased, and became quick and precipitate, and the pulse frequent and jerking (*saccadé*). These symptoms augmented to their extreme point at the fourth or fifth bleeding; the bellows sound then became very strong, the pulse

bounding, the cat tremor (*frêmissement cataire*) very marked, and the arterial pulsations perceptible, not only when the finger was applied over a large artery, but also when a considerable part of the surface of the body was embraced by the hand. Besides, the bellows sound was distinctly heard when the stethoscope was applied over a large artery—as the femoral, carotid, &c.[1]

As for the encephalic bellows sound—caused, it is said, by engorgement of the organs contained in the cranium, according to Fisher[2]—we have endeavoured, but in vain, to detect it in cases analogous to those spoken of by the Boston physician. M. Baudelocque, physician to the *Hôpital des Enfans Malades*, has not been more successful. We apprehend, indeed, without however affirming it to be so, that the American physician has committed an error, in taking for a phenomenon *sui generis* the resounding of the respiratory murmur, partly in the nasal fossæ and fauces, aided by the velum palati, and transmitted to the ear, applied to the top of the head through the bones of the cranium. The following, however, is the way in which Doctor Fisher explains this new bellows sound:—*It is seated in the arterial trunks at the base of the skull, when they are compressed by the brain, which happens whenever that viscus is pressed upon by an extravasation of fluid, or augmented in size by any inflammatory effusion. The calibre of the arteries is then diminished; the blood circulates in them with difficulty, and it is this impediment* (gêne) *to the circulation, and the friction of the blood against the sides of the vessels, that produces the encephalic bellows sound.*

BILIARY CALCULI.

RESEARCHES AND OBSERVATIONS ON THE SYMPTOMS PRODUCED BY BILIARY CALCULI RECENTLY FORMED, AND ON THE BEST MEANS OF HEALING THEM.

There are, doubtless, few physicians who have not observed the formidable symptoms produced, at long intervals, by biliary calculi, when the parietes of the gall bladder that incloses them, or those of the ductus communis choledochus, along which they sometimes pass, have not become accustomed to their painful contact; yet these symptoms, to which may be added those that supervene at the same time in the functions of the liver, have not been appreciated and described in a proper manner. Durande published, in the Transactions of the Academy of Dijon, a memoir on this subject, but it is to be regretted that the facts contained in it have been

[1] Treatise on Diseases of the Heart and Great Vessels.
[2] Medical Magazine, No. 15.

collected with so little care. The author had seen several cases, but he rarely entered into detail. He was, moreover, deceived regarding the effects of the remedy, which subsequently bore his name. Many authors, also, speak vaguely of bilious colic, which they regard as an epidemic disease, and attribute it to every cause except to biliary calculi. Practitioners have confounded the excessive pain caused by them with saturnine and vegetable colic[1]—sufferings proceeding from certain affections of the spinal marrow, as yet but little known. In short, the most recent works on diseases of the liver, and its connections, present nothing satisfactory on this matter.

The thirty-seventh letter of Morgagni, on "Jaundice and Biliary Calculi," contains a multitude of facts and learned researches; but the authors profusely cited by the learned pathologist had afforded him but imperfect cases—sterile as regards the signs of calculous affection at its commencement, and null as regards the treatment.

We have, consequently, thought that it might be useful to attract attention to this point of practical medicine; and that we might enable young practitioners to detect more easily the acute suffering caused by biliary calculi, which have been generally examined in their relation with chemistry, rather than with physiology and pathology. We shall begin with the detail of the cases—the facts that serve as a basis to this memoir.

CASE I.

Age twenty-six years—Protracted and acute mental distress—Repeated attacks of acute pain in the back and epigastrium—Bilious vomiting—Jaundice—Bathing—Bleeding—Antispasmodics—Narcotics—*Remède de Durande*—Purgatives—Cure after ten months' treatment—Excretion of a large quantity of biliary calculi—Two relapses—Fresh cure by the application of ice.

Madame M***, aged twenty-six years, of strong constitution and marked bilious temperament, and of timid disposition, which masked impetuous feelings, had been, from the age of eighteen, a constant prey to the depressing passions, in consequence of an unhappy marriage. In seven years she had experienced four distinct paroxysms of violent vomiting, the last of which was accompanied by the most severe symptoms. It forms the subject of the present history.

When the paroxysms which preceded this occurred, she had suffered for one or two days with violent pain in the back and epigastrium, after which she vomited three or four times a clear greenish bile, with considerable and painful retching. The pains continued to diminish for two or three days, after which she was completely restored, without having had the least fever.

On the 21st of July, 1821, after having suffered during the previous evening under the pain above mentioned, she vomited three different times, and with much retching, a quantity of yellow, thick bile. In the following days the digestion was slow and

[1] Colica pictonum.—*R. D.*

difficult; she had violent pain in the stomach, and every thing indicated that the paroxysm had not terminated in the usual manner. Indeed, after eight days indisposition she vomited a small quantity of yellow, thick bile; in the following night she was attacked with shivering and pain in the right hypochondrium; the next day the skin and eyes were of a yellow hue; pulse frequent; headache, &c. She was allowed for drink veal water, and a mixture containing a few drops of ether and laudanum. On the third day she felt relieved, but the jaundice had increased. This circumstance satisfied me that all the symptoms were caused by biliary calculi.

On the fourth day, (July 24th,) the jaundice disappeared almost entirely, with copious fetid perspiration, which tinged the *chemise* yellow; the urine was yellow, thick, and had an oily deposit; the pulse was not febrile, or the right hypochondrium in any respect painful.

She remained tolerably well until the fifth of August following, when the pains in the back and right hypochondrium returned, as well as the vomiting of green bile. The vomitings frequently recurred, and, in the intervals, she suffered excessively; she could neither lie down nor sit; but was compelled to remain with the body bent forwards and doubled up, with the hands pressing strongly on the contracted abdomen. Every moment she felt chills, which ran over every part of the body.

On the following day—the 6th—the pulse was contracted; she had acute pain in the epigastrium and in the region of the liver, which extended to the right shoulder. The abdomen was soft, and the biliary apparatus did not appear to be the seat of engorgement.

Prescription.—Chicken water *emulsionné;* eighteen leeches to the anus; a mixture with lettuce water, syrup of lemon, carbonate of potassa, and a few drops of laudanum. Repeated emollient clysters.

On the 7th, marked relief; pulse developed; skin cool; but the tongue was yellowish, with bitter taste in the mouth; dull pain and feeling of fatigue in the muscles of the abdomen.

Prescription.—Warm bath; emollient cataplasms to the right hypochondrium; continuation of the poppy clysters. The remains of this paroxysm gradually passed away, so that Madame M*** was able to continue suckling her child, of which she had been delivered six weeks previously: but soon afterwards, contrary to custom, there supervened, at very short intervals, pains in the epigastrium, hypochondrium and shoulder of the right side. Slight paroxysms came on, which, with the fatigues of suckling, slowly reduced her, so that she was compelled to send her child to nurse. This determination, undertaken with the best views, instead of relieving, affected her severely, and was the cause of a fresh paroxysm, during which leeches were applied twice, once to the right hypochondrium, and once to the epigastrium; the remedy of Durande was likewise administered twice. The symptoms be-

came speedily relieved, and the cessation of lactation gave rise to no other derangement.[1]

A violent attack occurred again on the 3d of December following. For four or five hours, during which she suffered almost unheard of pain, she vomited several times as usual. She felt in the right side, back and epigastrium, a sensation of tearing, which did not permit her to make the least movement, and compelled her to remain on the back, with her knees raised and kept as close as possible to the trunk. The paroxysm terminated soon on the following day by general jaundice, as had frequently happened. The remedy of Durande was suspended, and simple ethereal mixtures were alone administered. In the course of December she had also several paroxysms, but especially on the 31st. At this time, she was taken with violent vomiting, and intolerable pain in the back, which continued all the night, and constrained her to remain in the sitting posture, the chest supported on the knees, in a state of constant balancing, which alone rendered the pain supportable. This attack was followed by jaundice.

Prescription.—A mixture with laudanum and castor; opiated plaster of hemlock to the epigastrium.

In the course of January the paroxysms appeared with a degree of regularity every week, and during the day; previously they had occurred during the night. Leeches were applied to the vulva, to act as a substitute for the catamenia, which returned two months after the child had been separated from her; in other respects the symptoms were nearly the same, with some variation in their intensity.

Finding that bleeding, narcotics in various forms, as well as the remedy of Durande, had no permanent success, I decided on administering cathartics, which had been recommended in such cases by some authors, and of which I had hitherto dreaded the effects. Towards the end of January I gave her a purgative mixture, composed of two drams of senna, two drams of sulphate of soda, and an ounce of syrup of buckthorn, in four ounces of a vehicle. This mixture at first induced severe pain, and afterwards copious evacuations, in which were found a great many small biliary calculi. These were of very small size, round, irregular, of a brown colour, and very friable. Some days afterwards she passed a number more. From this time, Madame M*** felt much better, her paroxysms disappeared, and the frightful emaciation to which she had been reduced was replaced by her habitual *embonpoint*.

About two years after her cure she had another attack of this dreadful disease, which I removed speedily by the application of ice to the right hypochondrium. In the month of October, 1824, she had another severe paroxysm, which likewise yielded speedily to the application of ice. From this time she has not suffered: she has had several children, and is in excellent health.

[1] The *Remède de Durande* consists of two parts of essential oil of turpentine, and three of sulphuric ether. The ordinary dose is two scruples.

CASE II.

Age forty-five years—Depressing passions—Acute and deep-seated pain in the epigastrium, returning in paroxysms for several years, and with horrible suffering—Unsuccessful employment of various means—Cure obtained by the application of two bladders containing pounded ice.

Madame R***, aged about 45 years, had suffered for a long time, at distant intervals, under violent and deep-seated pain, which she referred to the epigastrium. When she had these attacks she was obliged, like the patient of whom we have just spoken, to hold herself bent double, with her hands applied to the abdomen to compress it, this being the only means that rendered her sufferings supportable. Thus she would remain for many hours, calling aloud for succour. The disease disappeared to return at the end of some months, without there being any diminution in the paroxysms. I was called to this lady in one of her attacks, and having been told by one of her relations that she had been widowed at an early age, and had long laboured under attacks of hysteria, I at first had no fixed idea respecting the nature of the disease, especially as I did not discover in other respects the character of the disease which they had mentioned to me. My treatment was therefore purely empirical. After different means which were attended with no more success than those that had been already employed, I though of applying a bladder of pounded ice to the epigastrium, and a similar one behind, opposite to the former. This produced, as may be conceived, a sense of extraordinary cold, which at first only modified her sufferings; but she was much surprised to feel no longer the pain that had tormented her for thirty-six hours, when the ice was entirely melted, and the fluid resulting from it was raised to the temperature of the body. From this time Madame R***, who scarcely ever passed a few months without an attack, to use her own expression, did not have them for five years afterwards. Being called in again, I had recourse to the same means and with like success.

It was not till long after the first time I had attended Madame R***, and whilst I was visiting the subject of the preceding case, that on reflecting on the nature of the affection I could refer its symptoms to biliary calculi. I satisfied myself of the etiology the second time that I saw this lady. I then remarked, what I doubtless ought to have done previously, that she was of a highly marked bilious constitution; that the hue of her skin was habitually yellow, that she was very irascible, and had been several times affected with jaundice after her attacks.

CASE III.

Age sixty-seven years—Acute pains in the umbilical region—Vomiting of blackish matter—Cessation of the symptoms—Relapse in the following year—Cessation of the disease with the discharge of a considerable number of biliary calculi excited by a cathartic clyster—Second relapse—Same treatment by the aid of cathartic enemas.

M. M., formerly bookseller, aged sixty-seven years, of good constitution, having every attribute of the bilious temperament, had

led a laborious life, but it had been crossed by reverses of fortune, which in his latter years had affected him the more, as his advanced age left him but little hope for the future.

In the month of April, 1828, he felt, for the first time, very severe pain in the umbilical region, which was treated by emollients and the application of leeches. The indisposition appeared to be ended when, in the middle of the night of the 19th or 20th, a new invasion of abdominal pain caused, for five or six hours, indescribable suffering, which he succeeded in assuaging by anointing with oil mixed with a large proportion of laudanum. On the following day, after he had bathed a few times, I explored the abdomen, and discovered that the epigastrium was painful on pressure, and that there was a preternatural resistance in the direction of the pylorus. This exploration made me apprehend that there was some organic lesion in the stomach, although a disease of that kind is not commonly accompanied by such acute suffering as that which I have mentioned. These fears were strengthened, when the patient complained of a feeling of heaviness in the stomach, experienced frequent nausea, and at length vomited a large quantity of mucous matter. The vomiting subsequently recurred at different intervals, the rejected matters having a blackish hue, although he was kept upon a rigid diet. Different means, among which I may mention frictions with the ointment of tartarised antimony on the epigastrium, bathing, and some opiated local applications, removed the symptoms, and also the unequal and resisting tension, which I had discovered in the epigastrium.

In the month of July, 1829, violent pain was again felt in the abdomen. It was more particularly seated in the right hypochondrium, whence it seemed to spread to different parts of the abdomen. It was soon followed by vomiting of bilious mucous matter, with the remains of food. Not finding the epigastrium tense, or painful on pressure, as in the preceding year, and reflecting on the sudden invasion of the symptoms and the disorder of the stomach, which, a short time before had fulfilled its functions well, I was led to think that all this morbid condition of the apparatus was caused by the presence of biliary calculi in the gall bladder or choledoch duct. The event soon confirmed this presumption. The patient having taken a purgative enema immediately after a paroxysm of pain, passed *per anum* a large number of small concretions, which, when separated from the excrementitious matter, had the shape of biliary calculi. They were indeed proved to be such by M. Chevallier, who was so good as to analyse them.

It would be difficult to describe the acute pain, which formed the principal sign of the disease that occupies us. It was analogous to those horrible colics which strike the nervous system deeply, and cause an undefinable feeling of indisposition—of anguish—of fatal presage. During the attack, the abdomen was painful, contracted, and formed a kind of floor, (*plancher*,) which did not permit the state of the abdominal viscera to be explored; the features were greatly changed; seated upon his chair he com-

pressed the abdomen forcibly with his arms, and adjusting himself to discover a supportable position; the pulse was not frequent nor the skin hot. This state of suffering commonly terminated by vomiting of bilious or mucous matter. After the attack he could scarcely keep on his legs, and felt, as it were, annihilated. He also suffered under obstinate constipation, which frightened him greatly, making him imagine that he had a stoppage of the intestines.

I had recourse, as in the preceding year, to the employment of bathing, anodyne and antispasmodic drinks; milk diet; Seltzer water, alone or mixed with beer; and I directed, besides, the *Remède de Durande*, of which he made use for a long time, but irregularly. At the end of each attack, which returned every week or thereabouts, I commonly administered a powerful cathartic enema, which caused the evacuation of some biliary calculi of a small size, and which, when examined with a lens, were of a rhomboidal shape.

At the end of about six weeks, the symptoms wholly ceased; the restoration of the functions of the bowels was, as in the previous year, the signal of cure.

In the month of June, 1830, the patient experienced fresh attacks, with the ordinary accompaniments of severe pain, and a degree of depression, felt so much the more as the second relapse seemed to him to remove all hope of cure. At the termination of the first paroxysm, a goodly number of biliary calculi was found in the evacuations produced by a purgative clyster. The premature relief which he experienced persuaded him that he would be free from another paroxysm, and that the severe regimen of former years would be unnecessary; but he was cruelly deceived by the return of a violent paroxysm, which only yielded to the application of leeches, followed for a fortnight by the severe regimen already mentioned, during which Durande's remedy was sedulously administered, conjointly with Seltzer water as drink, and milk as the only aliment.

In the last days of July he did not feel entirely restored from his relapse; the abdomen was not yet free; but diarrhœa of twenty-four hours duration, caused by the events of the three memorable days, entirely restored him to health.

Since 1830, M. M. has had two slight attacks of his disease, which is yielding yearly.

I owe to the friendship of Dr. Salone, my former colleague in the fourth dispensary, the following case of formidable symptoms, produced by biliary calculi, one of which, of considerable size, was discharged by vomiting. I know no case of biliary calculi so complete as this.[1]

[1] Morgagni, in the letter which we have cited, relates some cases in which concretions were rejected by vomiting; but the want of chemical analysis gives rise to some doubts as to their nature: he calls them biliary calculi.

CASE IV.

Age forty-nine years—Depressing passions—Acute pain in the back, and hypochondria returning in paroxysms—Vomiting—Syncope—Blood-letting—Opiate baths—Rejection by vomiting of a biliary calculus—Employment of acetate of morphine by the endermic method.

Madame G., widow, aged forty-nine, of bilious constitution, mother of two children, leading a sedentary life, had been for a year a prey to the depressing passions. In the course of January, 1833, she was seized, on the approach of menstruation, which had previously taken place with perfect regularity, with very violent pain in the epigastrium, extending between the shoulders and towards each hypochondrium. These pains were soon accompanied by mucous and bilious vomiting, followed by syncope and unquenchable thirst. Urine scanty and red; constipation obstinate.

On the first of June this lady presented herself at the dispensary with the following symptoms:—excessive pain in the epigastrium, with sense of laceration. This part was so painful that it could not bear the least touch; it was tense, without its being possible to distinguish by the feel the particular tumefaction of any important organ of the region. The *crises* were violent, accompanied by loss of feeling; the cheeks were red; the *contour* of the eyes yellow; the extremities were cold; the body was covered with a cold perspiration; she was delirious and loudly invoked death. The treatment adopted until this time, and the only one that afforded any relief, consisted in the methodical employment of general and local blood-letting, antispasmodics, and opiates internally and externally in baths. The same treatment was continued, with modifications suggested by circumstances. Thus, leeches applied to the vulva at the time of menstruation, aided by revulsive pediluvia, afforded relief, but did not prevent the *crises* from becoming more frequent, and from being accompanied by more serious symptoms, and especially by one characterised by retraction of the parietes of the epigastric region, in which a middle sized orange could be placed. The vomiting continued, as well as the constipation. Suddenly, in one of these crises, Madame G. passed by the mouth, along with muco-bilious matter, a round body of the size of a small hazlenut, of a greenish yellow colour; of the consistence of clay slightly dried, and easily bruised. The expulsion of this extraneous body was accompanied by violent colic, followed by copious evacuations, consisting of muco-bilious matter, which contained a great quantity of broken down solid matter, similar to that of the foreign body just mentioned. This *crisis* produced but very little relief. The *crises* were a little more rare; and the patient daily more enfeebled: at length, on the 15th of August, a terrible *crisis* occurred, accompanied with copious vomiting of liquid matters, having a reddish hue somewhat similar to the bleaching liquid, (*eau de javelle*,) without, however, possessing its chemical characters. All the means hitherto used for relieving

such symptoms, were without effect; and it appeared that the event must be fatal.

In this state, a large blister was placed over the region of the stomach; and the cuticle being removed after it had been applied eight hours, a quarter of a grain of acetate of morphine, mixed with a small quantity of cerate, and spread upon a beet leaf, was applied to the denuded surface. An hour afterwards, the symptoms were less violent, and had almost wholly ceased. On the following day, towards morning, the pain returned, but with little less intensity. These applications were continued for five days, with increasing success. She recovered sleep, which she had lost for a long time. Even in the day time, there was a degree of somnolency which indicated the effect of the acetate of morphine; but the vesicatory at this time became so painful that it was necessary to heal it. The improvement continued, and the cure proceeded apace. At length, after protracted restriction to diet, she was able to take a little cold milk and water; when taken boiled it was not digested. At this time more substantial food was necessary, but its employment and choice had to be regulated, as the stomach had still very great susceptibility. The use of *Vichy water*[1] completed the cure.

The extraneous body of which we have spoken, when subjected to chemical tests, presented all the characters of a biliary calculus, chiefly composed of adipocire.

CASE V.

Age twenty-six years—Amenorrhœa—Chronic periodical epigastralgia—Paroxysms of lacerating pain in the right hypochrondrium, with simultaneous affection of the same side—Bleeding—Antispasmodics—Opiates—*Remède de Durande*—Cathartics—Cure after the excretion of a great number of biliary calculi.

A young lady, twenty-six years of age, had complained, for a long time of various pains, which returned periodically. As they were felt in the vicinity of the epigastrium, it was believed that she was affected with hysteria. On consulting M. Gardanne, and having informed him that her father had died of disease of the liver, she herself being of a very bilious temparament, he suspected that biliary calculi might be the cause of her sufferings, which had hitherto been unknown to, and unexplained by, the physicians she had consulted.

During the crises, or rather the paroxysms of this affection, she complained of lacerating pain in the right hypochondrium. The slightest pressure on this part was insupportable; at times, the shoulder of the same side was also painful; she could neither move nor lie in her bed, but was obliged to hold herself doubled up, (*pelotonnée,*) changing her posture every instant, and having no quiet, excepting when the knees were brought close to the trunk, and the abdomen was compressed. She was affected, moreover,

[1] These waters are carbonated chalybeates, and almost all the springs are thermal. They are employed as tonics, particularly in chronic affections of the abdominal viscera.—*R. D.*

with amenorrhœa, emaciation, and great alteration of the features. The duration of the paroxysms was commonly from twelve to fifteen hours, during which she endured sufferings the most acute, and sent forth the most piercing cries. Sometimes they continued longer. One lasted three days, and threatened to destroy her.

After agents so numerous that it is impossible to attribute to any one more action than another,[1] she passed, *per anum*, several biliary calculi, of the size of the head of a large pin, which, when thrown upon coals, were converted into an oily matter, attended with a very vivid flame, and slightly mucous smell. Laxative drinks, and cathartic clysters provoked the discharge of fresh calculi, and the patient was not long in recovering, after a periodical series of unpleasant symptoms, so severe as to cause her life to be in danger.

SYMPTOMS THAT INDICATE THE PRESENCE OF BILIARY CALCULI.

The signs that announce the existence of recently formed biliary calculi are, in the beginning, very vague and uncertain. The patient almost always complains of pain in the epigastrium, and corresponding part of the back; at other times, vomiting recurs at intervals, and soon becomes periodical, as well as epigastric pain, which has sometimes caused the disease to be confounded with hysteria. The subjects of biliary calculi have a yellowish tint, which indicates that the hepatic apparatus is active; but this particularity is met with so often in those who enjoy perfect health, that it cannot be of essential aid to the practitioner. The pain of the back, of which we have spoken, extends at times to the right breast, neck, and shoulder, or else it follows the direction of the hepatic nerves. These symptoms, which the physician has often no opportunity for observing, are but the precursors to others more serious: soon, indeed, the pains recur and increase; the epigastrium and hypochondrium become so painful that they can scarcely bear the contact of the slightest clothing; and vomiting of pure bile, with a yellowish hue of the skin and eyes, reveal the great disorder of the biliary apparatus. Jaundice, accompanied by acute suffering, the absence of inflammation and fever, induce, at the same time, the suspicion that the cause of this great disorder is mechanical irritation produced by calculi.

In proportion to the duration of the disease, it has a tendency to become periodical, returns at uncertain intervals, and is incessantly aggravated. I have seen paroxysms of this terrible affection not allow of a moment's rest; the patient perpetually endeavouring to find a posture which may mitigate his sufferings. Some are constantly agitated, and tormented by inexpressible anxiety; others sit bent forwards, or writhe, pressing strongly on the epigastrium, or balancing themselves backwards and forwards to relieve their anguish. The face is much changed; the eyes surrounded with

[1] She successively made use of ether; of the *Remède de Durande;* opium; cathartics; and the *eau de Vichy*. She was bled and had leeches applied several times.

a dark circle (*cernés*); the stomach can neither bear food nor drink; the throat is dry, painful, and constricted; the tongue yellowish; the mouth clammy, with a bitter taste of bile. There is usually constipation; the urine is yellow, thick, and contains an oily, blackish sediment; and the perspiration, when it exists, tinges the linen yellow. The paroxysms are of short duration at the commencement of the disease, but they soon become longer, may continue for several days in succession, and put the patient's life in danger: this occurred to the young female, the subject of the fifth case. After these protracted paroxysms, fever and unequivocal signs of hepatitis sometimes appear, followed by great emaciation—the inevitable result of the pain—insomnia, and the impracticability of taking nutritive substances. Very often, either in consequence of long continued paroxysms or of cathartics, a great number of calculi are passed by stool, as may be seen in the first, third, and fifth cases; and they may be rejected by vomiting, as is proved by the fourth case.

The expulsion of calculi unquestionably constitutes the pathognomonic sign of the affection we are considering; and as the patient is singularly relieved by their expulsion, it may, on the other hand, be rationally concluded that the calculi are the cause of the sufferings: consequently, their excretion ought to be esteemed a certain presage of the cessation of the disease.

The complaints and lamentations of those affected with biliary calculi—the sufferings of which they anxiously speak—lead to the belief that their condition is one of the most painful that can be conceived: it would be intolerable, said a sick person once to me, had I not the hope that it must soon terminate.

If very protracted paroxysms leave evidence of their occurrence, short paroxysms, which are the most frequent, are not followed by any disorder; the suffering is gone as soon as the paroxysm is ended, and the patient quickly resumes his accustomed occupations.

Jaundice, when it exists along with them, is soon dissipated, as well as the other symptoms; the digestive passages alone preserve, for some time, a susceptibility which demands attention and an appropriate regimen.

The consequences of the presence of recently formed biliary calculi are rarely fatal; the organs that contain them ultimately become accustomed to their presence, and completely insensible to their contact: frequently, indeed, the gall bladder after death is found filled with calculi, of which no symptom—at least no recent symptom—had revealed the existence during life. How many persons of bilious temperament assert, that they have been subject, during their youth, to colics termed bilious, which they have not experienced since, or only a long time ago! These colics were induced by calculi, the presence of which has become altogether insensible.

If it occasionally happens, that old biliary calculi produce local symptoms, or an external phlegmasia—as in the cases in which J. L. Petit proposed to cut into the tumour to cause their exit

externally—these cases are uncommon, and evidently form an exception.

TREATMENT OF SYMPTOMS CAUSED BY BILIARY CALCULI.

The most judicious and best combined antiphlogistic and sedative treatment has no hold on the serious symptoms produced by recently formed biliary calculi. Baths, blood-letting, and emollient embrocations, are prescribed in vain, as well as the internal use of emulsive drinks with nitre, chicken water, lettuce water,[1] anodyne mixtures, &c. I have seen paroxysms of this cruel disease recur for several weeks in succession, without any of the means mentioned having produced any benefit. The *Remède de Durande*, of which we shall soon speak, has not succeeded better under the same circumstances; at times, indeed, it has but irritated the patient and induced vomiting. It has been seen, in the first case, that a cathartic, administered at the termination of a long paroxysm, occasioned the evacuation of a number of small calculi, and put an end to the sufferings of the patient. M. M., the subject of the third case, noticed that his disease constantly terminated under the influence of a cathartic clyster, composed of an ounce of sulphate of soda, an ounce of senna, and a dram of tincture of rhubarb. Cathartics, it seems to me, ought only to be administered about the end of the disease, as, it is to be feared, they might be rejected at the commencement, and only add to the sufferings of the patient. It is to be presumed, moreover, that they can only cause the expulsion of the calculi when in the duodenum, which can scarcely happen at the invasion of the disease.[2]

To prevent cathartics from being rejected by vomiting, they might be administered in the way of friction. I have employed the croton oil in this manner. The following fact, communicated to me by M. Delarroque, my colleague at the Hospital Necker, proves that we ought not to be timid in the employment of cathartics, notwithstanding the remark of Morgagni.[3] He was called to a lady forty-three years old, who had suffered for thirty-three months under a paroxysm of the disease which we have just described. These paroxysms returned every ten or twelve days. This lady was in the last degree of exhaustion, and had been bled several times. M. Delarroque discovered, in the right hypochondrium, a tumour extremely painful on pressure, and which he judged to be caused by biliary calculi. Notwithstanding the repugnance of the relations, he administered drastic cathartics, which produced the evacuation of a large quantity of blackish, pitchy matter, and a

[1] The distilled water of the *Lactuca Sativa* or "Garden Lettuce" is officinal in Paris. It is probably entirely inert.—*R. D.*

[2] This is not logical. When the calculi have once cleared the choledoch duct, and entered the duodenum, the mischief is over. Besides, the author is not consistent with himself; farther on will be found a far more satisfactory exposition of the modus operandi of cathartics in these cases.—*R. D.*

[3] Epist. 37, No. 49.

multitude of biliary calculi—some entire, and others in fragments. From that time the patient was cured.

Until the period of choice for the use of cathartics arrives, much time frequently elapses, during which the patient anxiously calls for aid. Opiates and antispasmodics, in all forms, are then laid under contribution. It was in one of these critical circumstances that I advised the application of pounded ice with success. (Cases 1 and 2.) It is an efficacious means which calms on the instant the sufferings, and may doubtless postpone their return, if it cannot remove them altogether—a thing much to be desired, until the period arrives when it is fitting to employ cathartics; for, unquestionably, we have no means capable of dissolving biliary calculi which form in the gall-bladder, although such means have frequently been proposed.

At a time when chemistry, regenerated, flattered us with the hope of changing the face of medicine, it was believed that substances which dissolve biliary calculi in the apparatus of a laboratory might have the same action within the human body; and the celebrated Fourcroy—one of the chemists who indulged the fairest and most sincere expectations on this matter—did not doubt that ethers, fixed and volatile oils, the alkalies, some soaps, &c., when properly administered, had the property of attacking efficaciously the calculi of which we are speaking. It was in accordance with those ideas, perhaps, that Durande, a physician at Dijon, fancied that the object might be attained by means of three parts of sulphuric ether, and two parts of essence of turpentine, administered in a small dose (2 scruples). This remedy has been very much vaunted, not only by its author, but likewise by Sömmering, Richter, and others, who attribute to it, unhesitatingly, the property of dissolving biliary calculi. Durande goes so far as to say that he has seen calculi, passed by stool, dissolved and transformed into a whitish matter similar to pitch (*poix*). But admitting, what appears to be contested by a considerable number of facts, that the remedy of Durande provokes or facilitates the expulsion of biliary calculi in certain cases, by allaying the spasms of the parts that contain them, can we admit that it has likewise the faculty of dissolving them? We think not; and in this we accord with several physicians, who have judiciously remarked, that, as ether is volatilised at a temperature very inferior to that of the stomach, its *rôle* must be quite secondary when it attains that viscus. On the other hand, the "remedy" causes symptoms which oblige it to be suspended, as has happened to myself. Moreover, there are several patients whose digestive organs are too irritable to bear this remedy at every period of the paroxysm; and, again, it is certain that this agent alone is almost always insufficient to occasion the expulsion of the calculi: cathartic clysters, baths, &c., have to be added. Sometimes its action has been attempted to be moderated by giving, as an excipient, some distilled water and a mucilaginous syrup.

Haller frequently had recourse to opium to allay the spasms and pains of the affected parts. I have very frequently used them, but

almost always with transient success. I have often had to congratulate myself on the administration of the tincture of castor, in small doses, in antispasmodic mixtures.

It is, doubtless, by impressing succussions on the digestive organs, and on the biliary apparatus in their vicinity, that cathartics facilitate the expulsion of calculi. The majority of those who have employed the remedy of Durande have not failed to follow it up by the administration of some cathartic enemata, Seidlitz-water, or magnesia. It has also been advised, I scarcely know why, to add the use of chalybeate and saline mineral waters—as those of Vichy, Plombières, and Balaruc; and it has been said—again, it appears to me, on no very solid foundation—that it is well to terminate the treatment by the use of tonic extracts, bitters, the juices of herbs, &c.—everlasting remedies, empirically employed, without any regard being paid to their action on the animal economy.

THE END.

American Medical Library.

ON THE

CURATIVE EFFECTS

OF

THE ABSTRACTION OF BLOOD:

WITH RULES FOR EMPLOYING

BOTH LOCAL AND GENERAL BLOOD-LETTING

IN THE

TREATMENT OF DISEASES.

BY JAMES WARDROP, M. D.

SURGEON TO THE LATE KING, &C. &C.

PHILADELPHIA:

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ADVERTISEMENT.

The greater portion of the materials which compose this volume has been already published in detached parts. Eminent as the advantages, both of oral discourses and of periodical journals, have indisputably been in affording facilities for the diffusion of knowledge, the author yet ventures to hope that this collection of various practical doctrines, connected with the subject of Blood-letting in the treatment of disease, will not prove unacceptable.

Embracing some of the most important discussions in medical science, the following observations were not submitted to the profession without much care and deliberation, and the favourable reception which they obtained, has induced the author to collect and publish them in the present form. In accomplishing this, however, he has not failed to use his best endeavours to render the work more comprehensive, by dwelling at greater length on some points, and by giving additional cases, illustrative of several interesting topics.

Charles Street, St. James's Square.
October, 1835.

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ON BLOOD-LETTING.

DISCOURSE I.

GENERAL OBSERVATIONS ON THE BLOOD.

Of the Blood; its functions; its "living principles;" its morbid changes; its quantity in man; its sensible qualities—smell, taste, temperature—The Coagulation of the Blood; its phenomena—Utility of Coagulation in stopping Hemorrhage; in uniting divided parts; in the process of reparation; and in the cure of Aneurisms—Deficiency of the coagulatory power in the Blood; sometimes hereditary; fatal cases; treatment—Consistence of the Blood—Component parts of the Blood; serum; red globules; coagulated lymph—The buffy coat.

The abstraction of blood from the human body is one of the most powerful of our therapeutic means, and the observations which I am about to make on this subject are to be considered chiefly as the result of my own experience in a great number of diseases amongst the different classes of society. Diseases assume an almost infinite diversity of form in the various ranks of the community, and this ought always to caution us against attempting to draw any general conclusions from examples of diseases only amongst a particular class of persons. Those who may have been in the habit of seeing diseases chiefly amongst the peasantry, or in the army, or in the navy, will be much struck with the various shades which the same complaints present in this metropolis, where patients are met with whose constitutions have suffered from indulgence in all the vices, and from all the mental excitement to which man is exposed amid this vast concourse of human beings.

A more fit opportunity cannot, perhaps, occur to dwell on the importance of carefully watching the effects of the same remedy in different examples of the same disease, and to point out how diseases are modified by the various circumstances and relations of each individual case.

Two examples of a disease scarcely ever occur which are precisely the same in all respects, and though they may resemble each other in many essential points, still they will be found to differ, either according to the period which the disease has existed —the age—the sex—the temperament of the patient,—or according to some other circumstance which demands consideration in the treatment, and which ought more or less to modify that

treatment. This observation applies in a particular manner to those diseases for which medicine possesses what is called a "specific" remedy. In treating these diseases, much depends on the state of general health in the individual before such specific medicines are administered. From want of such care, how often do we hear of the different preparations of mercury, bark, and iron, disagreeing with particular patients? In almost every instance this will be found to arise from some part of the alimentary canal being in a deranged state, which state ought to have been corrected previous to administering the specific remedy. The most useful medicines often fall into disrepute from want of such attention, whilst under other circumstances the dose must be changed, as well as the form of administering it. I do not mean to affirm that there are no individuals with whom particular medicines disagree. On the contrary, there are persons in whom cinchona, mercury, iron, and even milder drugs, as rhubarb, senna, and many saline medicines, have a decidedly pernicious effect. Such instances, however, are only to be considered as exceptions.

Diseases, I have already remarked, assume an infinite variety of character, not only in persons of different ages and constitutions, but also in people living in different districts of a country, and in different ranks of society. The limited observations, therefore, which are made on the treatment of patients in the wards of an hospital, have often had the imputation of being incorrect from the same remedies having been used with very different effects in other classes of the community. I have often heard medical men, whose practice has been confined to one class of persons, such as soldiers or sailors, and who have acquired great expertness and skill in treating that particular class—I have often heard such practitioners remark, how different were the systems which they found it necessary to pursue when they were called on to treat the diseases of other classes of individuals, particularly those of women and children, and such of the poor as are habituated to intemperance, and irregular habits of life.

I cannot dwell too strongly on the importance of this subject, as I think it may be distinctly traced that many errors in the treatment of diseases have arisen from one set of practitioners being accustomed to act with greater energy than is necessary, and following indiscriminately a particular system, and another who, from seldom seeing the more violent forms of disease, practise with timidity and indecision.

These observations, while they may be applied to the use of any remedy, are yet particularly applicable to that now under consideration, as there is no means more generally used, and more decided in its effects, than the abstraction of blood; and yet there is no point on which you will find greater diversity of opinion, and fewer distinct rules laid down, both as regards the circumstances and extent to which it should be employed. The practical errors to which I have now alluded, can only be corrected by a nice discrimination in individual cases; and the power of thus

discriminating can only be acquired by being in the constant habit of observing diseases amongst all classes of the community, and watching every description of disorder, more especially at an early period of the practitioner's life,—when the perceptive powers are most acute, and the mind has not yet been fettered by theoretical and hypothetical doctrines. A habit of examining diseases in the living body, and also a familiar acquaintance with the appearances of diseased structure, lead to a quick discrimination of the peculiarities of each individual case, and to a comprehensive knowledge of medicine.

Previous to entering on the consideration of the curative effects of abstracting blood, I propose to make some general observations on the natural qualities and the more remarkable changes of the sanguineous fluid.

The blood which is contained in the heart, in the arteries, and in the veins, is kept in a continual motion, called its *circulation*. During this movement, it undergoes certain regular and constant changes in a healthy animal. It receives new liquids, which are prepared by the process of digestion, and by cutaneous absorption; and it goes through changes in the lungs, where it is submitted to the action of the atmospheric air.

It travels throughout the whole body, furnishing to each organ certain materials, and it is deprived of other parts by the various secretions and excretions. That the blood should have been considered as the *life* of the body need not be wondered at; for if its passage to any part be destroyed, that part dies; and if beyond a certain quantity be extracted from the system, the death of the animal then follows. But the blood is not only necessary for the life, but for the growth, of every part of the body; and when any organ suffers an injury, it is the blood which is immediately employed for its reparation.

It is not, therefore, surprising that the blood should have been supposed to possess, in itself, a "living principle," an opinion advocated by the ingenious Hunter. The principle of life we must suppose to begin in some one of the component parts of a living animal; and as we observe a chain of phenomena commencing from the entrance of the food into the stomach,—the conversion of that food into chyle,—the mixture of the chyle with the blood,—and the life and growth of the various parts of the animal from that blood,—is it not as probable that the "living principle" is first developed in the blood as in any of the other constituent parts of the animal?

In order fully to comprehend the various functions of the blood —the morbid changes which it undergoes—its influence in repairing injuries—and the effects of removing it from the body for the cure of disease, it will be proper first to consider its component parts, and the alterations in their qualities and proportions, all which form important indications in the diagnosis of diseases.

It was remarked by Dr. Heberden, that neither the blood nor the urine can afford criteria for the treatment of diseases. I need make no comment on such an unphilosophical opinion; and in proof of its erroneous tendency, refer to the works of Dr. Prout, wherein you will perceive how important a comprehensive knowledge of the chemical qualities of the urine is, in the diagnosis of the diseases, not only of the urinary organs, but of the whole system; and I have no doubt that if an equally philosophical mind were employed in the analysis of the *blood*, much important information regarding the morbid changes of that fluid, and the modes of remedying them, might be discovered. It has indeed been, of late, too much the custom to ridicule the humoral pathology; but this has not arisen from the attentive investigation of disease.

It is indeed extremely probable that the qualities of the blood are considerably altered in many diseases, though such changes cannot always be detected. We observe, for example, that there is a complete alteration of the serum in jaundice, and were it not for the change of its colour, we should perhaps have no evidence that the blood was at all altered in that disease. Odorous substances are also mixed with the blood, as balsams and asparagus are found in the urine.

With regard to the quantity of blood in man, Haller supposed that about fifty pounds of fluid circulated in a person weighing one hundred and sixty pounds, of which he considered twenty-eight pounds to be blood.

There has not, however, been yet contrived any mode of ascertaining the precise quantity of blood in different people, and it is not at all improbable that the quantity may vary much in the same individual at different times; neither is it at all certain, whether persons afflicted with diseases which are relieved by the abstraction of blood from the system, have had an undue quantity of that fluid.

It is generally considered, that, in proportion to the size of their body, young persons have a greater quantity of blood than adults, that adults have a greater quantity than the aged, and that fat people have also less blood than the lean.

That there is a great difference in the quantity of blood in different people would appear probable, from the circumstance, that if a succession of individuals be observed, afflicted with a similar disease, requiring the abstraction of blood for its cure, the quantity necessary to produce the same effect varies very much in every different instance, which may probably depend on differences in the quantity of the blood in each person.

The quantity of the blood varies very much in dead bodies. In general, it is abundant in those who have died from drowning, and those diseases which suddenly destroy life, as apoplexy, whilst those who die from lingering ailments have a very small quantity of blood.

Fresh blood emits a peculiar animal *smell*, and a thin vapour rises from it, which is nearly as insipid as water. It is glutinous to the *touch*, slightly saline to the *taste*, and its specific *gravity* is rather greater than that of water.

The *temperature* of the blood has not been found to vary much in different diseases, its natural heat diminishing a few degrees in the cold fit of ague, and increasing during inflammatory fever; and it has also been observed that the arterial is warmer than the venous blood.

Coagulation is one of the most important properties of the blood. Whenever blood is removed from its proper vessels, a process of coagulation takes place, and this coagulation happens sooner or later, according to particular circumstances.

Healthy blood coagulates in about three minutes and a half; the coagulation is usually completed in seven minutes, and in twelve minutes the mass becomes firm.

Blood coagulates in the ratio of its specific gravity; the lighter the blood the more slowly does it coagulate; and coagulation takes place more or less quickly, according as the orifice from which it flows be small or large, or the stream fast or slow.

Coagulation, too, is rendered slower by cold. We observe it take place quickly when the blood is received into a basin or flat vessel, and it coagulates soonest if the vessel be metallic. The rapidity of the coagulation also depends on whether it be the first or last portions which are abstracted, either from an artery or a vein.

Blood, which is kept at rest, coagulates more slowly than when it is stirred or agitated. It coagulates most quickly when drawn through a small orifice, and allowed to trickle down the arm. Strong action of the arterial system appears also to dispose the blood to coagulate slowly, but when the vascular action is diminished, as in fainting, coagulation takes place more quickly; and hence the assistance nature derives from syncope, in plugging up the orifice of a bleeding vessel.

The power of the blood to coagulate is essential for the performance of many important functions in the animal economy, whether in a state of health or disease.

1st. It is this quality of the blood which arrests the bleeding from a wounded vessel.

2d. Coagulation is the means of limiting spontaneous hemorrhages, by plugging up the open mouths of the vessels from which the blood is poured out.

3d. It serves to agglutinate the divided edges of wounded skin.

4th. It is important in the restoration of a lost part, by forming a covering to prevent the contact of the external air with the newly-exposed surface.

5th. It forms a parenchyma or matrix for the passage of new vessels, in the restoration and regeneration of parts that have been destroyed, as in the process of granulation.

6th. It is the power of coagulation which nature employs to prevent the bursting of an aneurismal swelling.

7th. And lastly, it is equally useful in plugging up the canals of diseased veins, and in agglutinating their wounds.

As regards *spontaneous hemorrhage*, it has been already observed, that this coagulating power of the blood answers a very important

purpose. There are many diseases wherein an effort is made by nature to relieve the general system, or a particular organ, of a superabundant quantity of blood, and little or no disposition is made to arrest its progress, until considerable debility or syncope supervenes, which has the effect of promoting the necessary coagulation. And, moreover, when blood is lost by a wound, the diminution in the quantity of the blood, by retarding the force of circulation, creates a power in that blood to coagulate more speedily, and thus arrests the hemorrhage. Hence is derived the useful practical lesson of encouraging a state of syncope, in order to assist in stopping hemorrhage. Indeed, when syncope does take place, during operations, we ought to watch the state of the wound, after the syncope goes off, before venturing to close it, for the vessels often begin to bleed, when, in order to prevent secondary hemorrhage, they ought to be secured by ligatures.

The importance of this property of coagulation in the blood, is also exemplified in repairing injured or lost parts of the body. When the skin, for instance, is divided, the cut edges adhere, and this adhesion is effected by a quantity of coagulated blood being interposed between the lips of the wound. Here the coagulated blood seems to act as a mere bond of union, and, I may observe, as a general rule, that whenever we are able to keep the lips of a wound together by the adhesive property of the blood alone, blood is the most preferable, and the best plaster.

Hunter believed, that the coagulum thus formed between the edges of a wound, possessed within itself a power of generating vessels, and thus became organised; but whether under the ordinary circumstances of reparation new vessels are formed in the midst of the coagulum, or whether they shoot into the coagulum from the adjacent surfaces, and are continuations of those which have been divided, it is certain that vessels meet together and anastomose freely in the coagulum, which, along with the nerves that are also supplied, ultimately constitute a complete organisation of what originally was a mass of coagulated blood.

The power of the blood to coagulate for the purpose of the restoration of parts, is exemplified when a portion of the skin is accidentally removed. In such a case, coagulated blood is first deposited on the wounded surface, and coagulable lymph is then effused by the arteries between the coagulum and the wounded surface, for the purpose of forming a matrix for granulations; the growth of which granulations and their subsequent cicatrisation repairing the lost part.

The power of coagulation in the blood is also employed by nature for the cure of *aneurism*—one mode at least of spontaneous cure entirely depending on this process. When an aneurism is formed, the blood which fills the dilated part of the vessel, or the proper aneurismal tumour, does not circulate either in the same direction, or with the same velocity as in the natural condition of the vessel. The consequence is, that a process of coagulation of the blood in the tumour commences, and the extent of this process varies

according to the form, size, and position of the aneurism. In some cases, the tumour, however small, is found completely filled with a mass of coagulum, whilst in other cases the parietes of the artery have derived comparatively little additional thickness.

The coagulum, however it may be formed in aneurismal tumours, is not produced quickly, and consists in the deposition of one lamina of fibrin upon another, which fortifies the parietes of the tumour, and prevents its bursting. In cases where the aneurismal cavity is completely filled, an absolute cure of the disease is thus accomplished, the diseased portion of the vessel being rendered no longer liable to rupture. There is, however, a difference to be observed between the coagulum of an aneurism and a common clot of blood, though the distinction has not been clearly pointed out by pathologists.

This quality of coagulation in the blood, which, as I have endeavoured to show, is so powerful an agent in arresting hemorrhage as well as in accomplishing other restorative processes, has in some persons been found wanting, and hence bleedings, even from very small vessels, have not been capable of being stopped, and the hemorrhage has in some instances even proved fatal. As few such cases are recorded in medical works, it may be expedient, on this occasion, to bring together all the materials I have been able to collect on this interesting subject, and mention those examples of this peculiarity of the blood which have come more immediately within my own knowledge.

A gentleman found on several occasions great difficulty, and it often required many hours, before he could stop the bleeding occasioned even by superficial scratches, such as he sometimes met with in shaving. At length he accidentally received a slight wound on one of his fingers, and, every effort to arrest the hemorrhage failing, he expired.

I attended a patient where the introduction of a common seton needle in the side was followed by a fatal hemorrhage. The gentleman, who had an enlarged spleen, was advised to have a seton introduced, and the operation was performed in the usual manner by Sir Astley Cooper. Alarmed by the quantity of blood oozing from the wound, I was sent for to see the patient in the evening of the same day. On withdrawing the cord, pressure carefully applied with graduated compresses did not avail, and the hemorrhage being so profuse as to make it appear probable that some vessel of considerble size had been wounded, I thought it expedient to divide that portion of integument between the two perforations made by the seton needle. Having done this, I found that the blood issued from numerous orifices, and I secured no less that nine vessels with ligatures. Blood continued, however, to ooze from numberless small orifices over the whole surface of the wound, which every mode of treatment usually resorted to failed in arresting, and the patient died in a few days.

An interesting case, which I conceive to have been of the same description, is recorded by Mr. Blagden, in the eighth volume of

the Transactions of the Medical and Surgical Society. A young man, at different periods of his life, experienced great difficulty in stopping the bleeding from very slight wounds. At length he had a tooth extracted, which was followed by a violent hemorrhage, that neither styptics, pressure, the actual cautery, nor a ligature on the carotid artery, could control, and he died a week after this injudicious operation.

Mr. Wilson mentions a case where a child died from the bleeding of a small bite on the tongue. "I once had an opportunity of inspecting the body of a young person in whom, during life, a very small degree of pressure on any part of the skin produced the appearance called black and blue to that degree that the nurse, in dressing him, although a very careful woman, frequently left the impression of her fingers on different parts of his body. I have frequently seen the child with bruises of a livid colour, arising from falls, or even pressing against any thing with the slightest force; if a pin happened to scratch him, great difficulty occurred in stopping the bleeding, and the application of a single leech was productive of so much danger from the continuance of the hemorrhage, that the child's life was nearly lost. The complexion of the child was fair, and the appearance delicate, but not unhealthy; the pulse was full, but never hard, and the functions of the viscera generally seemed to go on as in other children. When between three and four years of age, the child bit its tongue; there was an impression of the teeth both on the upper and lower surface, but not very deep; the bleeding from the wounds continued for some hours, and having resisted all attempts to stop it, I was requested to see the child. I tried compression, and every kind of styptic, which produced a temporary, but no permanent effect, so that although the child lived five days, and during that period I saw it several times in the day, and frequently remained an hour or two with it, though I never failed in producing a temporary stoppage of the bleeding, it was renewed almost as soon as I left the house. I included the whole of the bleeding surface in a ligature, which for a short time stopped hemorrhage, but ulceration very soon took place, and a fresh bleeding occurred; to use the needle was now impossible, as the least puncture produced a bleeding almost as violent as that from the wound. I destroyed the surface by caustic, but the eschar was soon thrown off, and the bleeding renewed; the child became very weak, and, as the bleeding occasionally occurred during sleep, was watched over very carefully; but on one occasion, when, upon the supposition that he was asleep, he had not been looked at by the nurse for half an hour, she found that a very slight bleeding, not exceeding a teaspoonful, had taken place, and that the child was dead."

A curious case came within my own observation, where this deficiency in the coagulating power of the blood appeared to be *hereditary*. A family of which there were several branches, all found a particular difficulty in stopping the hemorrhage from any

very slight wound they might have accidentally received, and one of the brothers who had the common operation for fistula performed, died of a bleeding which was occasioned by the incision made in the operation.

But by far the most interesting case which has come within my knowledge, and where there was not only a want of power in the blood to coagulate, but where that peculiar state of the sanguineous fluid existed in many branches of the same family, occurred in the practice of Mr. Ward, surgeon, at Ewell, and I shall conclude this part of the subject by relating the circumstances as they were communicated by him to me:—

"The particular state of the boy's constitution was manifested at two months old, when his arm was unusually bruised by a slight blow; and soon after this accident, there was much difficulty in restraining the hemorrhage occasioned by a superficial wound of the lip, and since then, whenever he has had a slight scratch. When he first came under my care, he had received a superficial wound in the palm of the hand a few days previous, and appeared much exhausted from hemorrhage. I attempted to restrain it by pressure, oil of turpentine, caustic, and by strong acetic acid; and, after giving him some aperient medicine, he took the diluted sulphuric acid in large doses, and astringents. The case becoming very desperate, for the hemorrhage continued unabated for two days after I first saw him, I now ordered a dose of superacetate of lead with opium every three hours, when the hemorrhage soon abated, but whether from the effect of the medicine or not I was unable to determine. It appeared to me to have had considerable influence. I formed some idea of the extent of the hemorrhage by having the arm placed above a plate, when twelve ounces of blood was collected in as many hours. This blood was not at all coagulated, and I could only observe clots when the blood was suffered to collect in folded linen, and then in very small quantities. The boy, after this attack, was completely exsanguined, suffered excessively with all the symptoms of protracted hemorrhage, and it was several months before he recovered.

"Since that time he has been under my care for a wound on the head, the hemorrhage from which was restrained with less difficulty, because pressure could be more effectually used, and at the same time I applied the lunar caustic freely. The bandage remained for more than a week, when an ulcer, having a very offensive smell, of about the size of a shilling, remained. This went through the natural process of granulation, and certainly healed more rapidly than under common circumstances. At this time the boy is well, and is in the eighth year of his age.

"The circumstances connected with this boy's family are equally remarkable. His mother has a numerous offspring, and a brother, who is twenty-two years old, is afflicted in a similar way, and is also an almost constant sufferer with rheumatic gout. He had five uncles and two aunts; all his uncles had the same hemorrhagic tendency, three died from a division of the frænum linguæ, one

from the extraction of a tooth, and the other had the same disease, but died from some other cause!

"The aunts had not that tendency in their persons: the one had three boys, two of whom were thus afflicted; the other has two boys and two girls: both boys are afflicted in the same way.

"From the above account, there can be no doubt of the *hereditary nature* of the disease; and it is a singular circumstance, that it is confined in this family to the male branches."

The treatment of such cases becomes an object of interesting enquiry, and a successful analysis of the blood might perhaps teach us how to supply the deficiency in its power of coagulation. Those substances, which dispose the blood to coagulate, seem to have more effect in restraining the bleeding for a time than those which excite the artery itself to contract. Hence styptic applications have been employed; and these act by producing a chemical change in the blood with which they are mixed, and thereby form a cake or cement, to supply the place of a coagulum.

Sir C. Scudamore has recommended, with much confidence, the application of a saturated solution of the sulphate of alum for arresting hemorrhage. This salt, by producing an immediate coagulation of the blood, forms a coagulum at the mouth of a bleeding vessel, and thus accomplishes the first step of that process by which bleeding is arrested. The alum solution should be used warm, in which state it favours the coagulation, and this warm application is not to be considered inconsistent with the application of cold to the parts in the immediate vicinity of the bleeding vessels, the effect of which in diminishing the action of the vascular system is well established. The alum solution is to be applied either by a compress wet with it, moderately pressed on the bleeding part, or it may be injected into a bleeding cavity, such as the nose, uterus, bladder, or rectum.

Besides the cases to which I have now alluded, wherein a want of the power of coagulation in the blood seems to depend on a peculiarity of constitution, and in some instances on a hereditary taint, there are other causes which produce deficiencies in the power of the blood to coagulate.

In many diseases, where the solids are verging towards putrefaction, the disposition of the blood to form a firm coagulum is much lessened, as in typhus fever and scurvy. In animals, too, that die suddenly from over exertion, the blood does not coagulate. Most persons are aware of the difference in the blood of a hare which has been shot, and of one which has been run down by hounds; and in persons who are suddenly killed by lightning, or during violent fits of passion, or criminals by hanging, the blood does not coagulate. Alkalies, and common salt, entirely prevent the coagulation of the blood, whilst mineral acids, promote that process. Is it on this principle that the internal use of mineral acids is so beneficial in hemorrhages? Can this effect of sea salt on the blood account for the state of the sanguineous fluid in persons afflicted with sea scurvy? it being well known that this

complaint is the effect of eating salt provisions, and that the blood in such persons is unusually thin. We know that this complaint is also cured by the exhibition of acids. It is a characteristic feature in the menstrual flux, that the discharge does not coagulate like common blood, nor does it ever become putrid, until after artificial evacuation, as is exemplified in cases of imperforated hymen, where its exit had been often prevented even to an advanced period of life.

The consistence of the blood is another quality which merits attention. Blood, in inflammatory cases, is not only longer in coagulating, but it is also much thinner than natural, which thinness has been proved by Hewson to depend on the greater attenuation of the coagulable lymph or fibrin. The whole mass of inflamed blood, before coagulation, is actually thinner than the serum of the same blood after coagulation has taken place, and the crassamentum or clot separated from it. Hence the disposition of arteries in an inflamed part to throw out coagulable lymph, may, more or less, depend on this change in the blood.

Whilst blood is flowing into a basin, our eye enables us to form some notion of its consistence, but this is best ascertained by the time it requires to coagulate. A firm texture of blood has been generally considered as a mark of strong action in the arteries, and as pointing out the propriety of abstracting it; and, on the other hand, when its texture is very loose, the utility of repeating venesection has been considered questionable.

Soon after coagulation, blood separates into two substances, the crassamentum and the serum.

The serum, or watery part, exudes through the pores of the coagulum, whilst the crassamentum contracts, leaving the sides of the vessel containing it, and preserving its form.

The proportions of the serum and crassamentum are various. In healthy blood they are nearly in equal quantities; whereas, in very stout and laborious people, and also during some inflammatory diseases, the crassamentum is in the larger proportion.

The serum is a fluid of a pale straw colour, has a slight saline taste, is somewhat viscid, rather heavier than water, and mixes readily with it. When exposed to a moderate heat, it coagulates into a light straw-coloured glutinous mass, and the same effect is rapidly produced by its sudden admixture with an equal quantity of boiling water.

The part of the serum which is thus coagulated, either by the application of heat, or an admixture of acids, possesses most of the chemical properties of the white of egg, and has been termed the *albumen*.

When the serum is coagulated by heat, there oozes from the mass a small quantity of viscid substance, which has been termed the *serosity*, and is a mucous fluid.

The serum has been found of a white colour, like cream, and to contain globules, which peculiar appearance has been attributed to an admixture of the chyle with the blood. This appearance,

however, has usually been met with in the serum of persons whose appetite has been impaired, and who have been subject to sickness and vomiting. Hewson supposes this change of colour to arise from absorbed fat, and says that all the persons in whom he found the serum white were plethoric, and were relieved by blood-letting. If a person be bled soon after dinner, the serum appears milky.

The serum is in greater quantity in what has been called *sizy* than it is in healthy blood, and the greater quantity which makes its appearance when you examine a vessel containing such blood, arises from the strong contraction of the fibrin forcing all the serum out of the clot. In such blood, the coagulum is remarkable in its shape; in place of having a smooth, plane surface, its edges are inverted.

When serum collects in a preternatural quantity, either in the cellular texture, or in any of the serous cavities, as those of the pleura, pericardium, or peritoneum, it produces the disease called *dropsy*.

The red globules were supposed by Hunter to be an indication of physical strength; the stronger an animal was, the more red globules did its blood contain. Wild animals have a greater proportion of red globules in their blood than those which have been domesticated, and there is a curious difference in the colour of certain muscles in the same animal, depending, no doubt, on the colour of the blood; this is particularly remarkable in the pectoral muscles of the black-cock, one set being much paler than the others.

The colour of the globules themselves varies in different vessels of the body, and there is a difference in the shade or intensity of the colour of the blood from the quantity of globules which it contains. There are also diversities of shade of red in the different systems of vessels. It is of a bright scarlet colour in the systemic arteries, and purple in the veins, and it is changed from the scarlet to the purple in passing from the ramifications of the aorta into the veins. Hence the variety in the shades of red, in different inflammations, arising from the differences in the proportion of the number of arteries and veins of the inflamed part.

When kept at rest, the blood in the arteries becomes of a dark colour, and in extravasations of arterial blood into cavities, if not exposed to the atmospheric air, it also assumes a dark colour.

Although blood is usually dark in the veins, it is not so under all circumstances. For when a large orifice has been made in a cutaneous vein, the blood which immediately follows the withdrawal of the lancet is black, and this is sometimes succeeded by blood of a florid scarlet colour.

The blood is also found of a florid colour in the veins of a part affected with common inflammation; and if the bandage used in phlebotomy has been kept some time on the arm, the blood which first flows from the orifice is very dark.

In diseases obstructing respiration, the blood is likewise of a very dark colour. This is the case during a fit of asthma. In diseases where the respiration is quick, as in phthisis, the blood is usually

florid, and indeed, in inflammatory diseases generally, the blood is more than naturally florid.

The red globules are not distributed, like other parts of the blood, throughout the whole frame, as appears from the want of the red colour in certain parts of the body. In some diseases their number is increased, at least in particular parts, and this may alone depend on the change in the size of the containing vessels. When much blood has been taken from the body, the red globules are not so soon renewed as its other parts, hence the paleness which often exists for a long time after copious depletions.

Mr. Brande found that the menstrual flux in its component parts resembles a very concentrated solution of colouring matter in a diluted serum.

Changes are also observed in the colour of the external or cutaneous bloodvessels in many diseases, which informs us that changes must have taken place in the sanguineous fluid. Observe the varieties of red in the colour of the lips and cheeks, in the eyes, and in the skin covering diseased parts. Observe the various shades of redness in the skin around different ulcers—changes which alone, in many instances, tell us the nature of the disease!

Richerand amputated the arm of a very old man, who for thirty years had an ulcer, which was connected with a varicose state of the veins of the limb; and the health of this individual was much impaired. During the operation it was observed, that "the blood as it flowed from the arteries was much less red than that which was lost by a young man whose leg was removed on the same day. In fact the venous blood appeared as if dissolved, of a violet colour, or somewhat like that produced by log-wood. It did not coagulate like that of the young patient, but separated into a serous fluid, containing a few clots very little coloured."

The coagulable lymph, *gluten*, or *fibrin*, is that part of the blood which, as has already been mentioned, forms with the red globules the *crassamentum* or clot.

When the crassamentum is deprived of its red globules, which may be readily done by allowing a small stream of water to pass upon it, and by squeezing out the serum, what remains is the coagulable lymph. It is a white, tough, elastic mass, having a fibrous appearance, even in some instances apparently formed into laminæ.

This is the ingredient of the blood which renders it susceptible of coagulation, when removed from the living body, both in healthy and in certain diseased processes,—a change, which, whether we regard its rapidity, its degree, or its various modifications, forms an important diagnostic character in particular diseases. Mr. Dowler, in his ingenious paper, observed, that when inflammation takes place accompanied with effusion, the first substance that escapes is serum,—but if the inflammatory action increases, *fibrin* is effused, and the inflammation still increasing, pus is then formed.

While the blood is in a fluid state, the coagulable lymph cannot

be separated from the serum, but in disease this separation often takes place. Hence coagulable lymph is effused on the surfaces of inflamed membranes, or into cavities, such as those of the pleura and peritoneum; whilst, in other diseases, the serum is separated from the blood, and collected in cavities, forming the different dropsies.

The coagulable lymph is found in the greatest quantity in the blood of those afflicted with inflammatory affections of the fibrous textures, particularly in rheumatism.

There is a very considerable difference to be sometimes observed in the quantity of the coagulable lymph in blood taken in different cups from the same patient at the same bleeding. In some instances, this difference has been observed nearly one half. The coagulable lymph of healthy blood is more firm than that of sizy blood.

Whilst the blood is coagulating, the process takes place so quickly in healthy blood, that the red globules are diffused throughout the whole of the crassamentum. But this is not the case in some diseases, wherein the coagulation occurring more slowly, the red globules, from their greater specific gravity separating from the coagulable lymph, are found disentangled at the bottom of the vessel. In some cases, the coagulation takes place when the red globules have scarcely reached below the surface of the crassamentum; and it is this portion, deprived of red globules, which forms what is called the "buffy coat."

The buffy coat, or "inflammatory crust," as it likewise is called, is of very different degrees of thickness, and the time required for its production varies from a few minutes to upwards of half an hour.

The appearance of a buffy coat is generally considered as one of the most striking characters of the inflammatory diathesis. A buffy coat, however, is not to be deemed, either as a certain test of inflammation, nor is it a safe index of the propriety of blood-letting. Whilst inflammatory diseases are at their acme, there is often no appearance of the buffy coat in blood taken from a vein; but in the latter stage of inflammatory disease, and when blood can no longer with propriety be abstracted, the buffy coat becomes remarkable. In local inflammation, before the constitution appears much influenced, the blood which is drawn from the larger vessels of the inflamed part, has been found to form a buffy coat, whilst blood drawn from distant vessels does not show the same disposition.

Dr. Tweedie once saw the buffy coat in blood taken from the temporal artery of a person labouring under pneumonia; and the great prevalence of the buffy coat in diabetes first led Dr. Watt, of Glasgow, to treat that disease by frequent bleedings.

In the advanced stages of pregnancy, it has often been observed that the blood has a peculiar disposition to form a buffy coat.

Dr. Hamilton has observed, that blood drawn from the arm of the most delicate and debilitated individual, subjected to a course

of mercury, exhibits the same buffy coat as blood drawn from a person labouring under pleurisy.

If a man in health be bled immediately after taking violent exercise, the blood shows a buffy coat.

DISCOURSE II.

OF THE ABSTRACTION OF BLOOD.

The utility of Blood-letting—Difference in the effects of abstracting Arterial and Venous Blood—Of a local abstraction of Blood—Effects of incisions made in inflamed parts—Spontaneous Bleeding from wounds—Local Bleeding, when to be employed.

Blood-letting has been employed in the treatment of diseases since an early period of the history of medicine. We are told that the Egyptian physicians were led to make use of it from a curious circumstance in the habits of the hippopotamus. They observed that prodigious inhabitant of the Nile, on particular occasions, come out of the river and trample his gigantic feet against a sharp point of a broken reed, by which he lacerated the skin in order that a bleeding might ensue, and which he arrested, after it had been sufficiently copious, by plugging up the wound with mud. Historians also tell us of some savage tribes who, when they are afflicted with feverish disorders, are in the habit of lacerating their skins with the sharp edges of broken shells, so as to produce a flow of blood.

The phenomena of spontaneous hemorrhages, the signal relief which these natural discharges afford, and the serious mischief arising from their suppression, must, however, have laid the foundation of a rational system for the employment of blood-letting.

The abstraction of blood is usually employed as a remedial means, either for the purpose of diminishing the action of the heart and arteries in inflammatory diseases, or for the removal of a surplus quantity of that fluid, from particular organs wherein there is what has been called "plethora," or a "congestion" of blood. A quantity of blood may also be abstracted in some diseases where its qualities have become changed; but whatever explanation be given of the effects of blood-letting, there is no doubt of its beneficial results in the treatment of disease, whether the sanguineous fluid be removed by art, or by a "spontaneous hemorrhage."

Blood may be abstracted either from the *venous* or from the *arterial* system; I am not, however, aware, that much attention has been paid to distinguish the difference of the effects which are produced by taking blood from an artery and from a vein, though it can readily be conceived that such difference may be considerable. The chief reason which is usually given for opening an artery in preference to a vein, is that the blood is obtained more

directly from the particular part affected—in larger quantity—and more promptly, than it would be from opening a vein. But as the temporal artery is almost the only vessel on which arteriotomy has been performed, it must be admitted that we know little of the effects produced by abstracting arterial blood, except when taken from that vessel. The result of my own experience is unfavourable to arteriotomy; having generally found that the inflammatory symptoms recur much more frequently after a certain quantity of blood has been removed from an artery, than if an equal quantity had been taken from a vein; and I know that this coincides with the experience of others. There are, however, cases where the difficulty or even the impossibility of procuring the requisite quantity of blood from a vein, renders arteriotomy an important and even an indispensable operation for the abstraction of blood.

A little reflection on these two modes of blood-letting, may to a certain degree explain how this difference of effect is produced.

When blood is abstracted from an artery, there is an immediate diminution in the supply of blood to the part nourished by that artery; but such is the vigour of the anastomosing branches, that the supply of blood which is thus cut off is very quickly restored. This is confirmed by observation. If one of the carotid arteries be tied, almost immediately the temporal and occipital branches of the carotid of the opposite side can be distinguished, through the integuments, dilating themselves, becoming tortuous, and struggling, as it were, to circulate an additional quantity of blood. I was first led to make this remark in the case of a child, on whose carotid artery I had placed a ligature for the cure of a large nævus on the cheek. Almost immediately after the operation, I observed the frontal, temporal, and occipital arteries of the opposite side of the head enlarging, increasing in their action, becoming tortuous, and actively employed in supplying the place of those vessels whose channels had been obstructed. Indeed, it was a knowledge of this function of the anastomosing branches of arteries, when a trunk is obliterated, that led Hunter to perform the "high operation," for popliteal aneurism.

The same interesting phenomenon is exhibited in the eye. If an artery on the sclerotic conjunctiva, passing into a speck of the cornea, be cut through, vessels conveying red blood will be immediately perceived, stretching across the cornea from the opposite side, to supply the place of the vessel which had been divided.

Whenever the supply of blood to a part is diminished, the arterial system, by a wise provision of nature, makes an effort to throw blood by another channel to the part which has been deprived of its natural quantity of blood, and thus the action of the heart and arteries must be more or less increased; but the abstraction of blood from a vein is followed by no such increased action of the arterial system—there is no local diminution in the supply of arterial blood—no effort made by the arteries to supply the place of the venous blood which has been removed. On the contrary, a diminution in the supply of blood to the heart by the

veins, will, as I have just observed, have the effect of diminishing the vigour of the heart's action, and, consequently, that also of all the arterial system.

The effects of opening the temporal artery in puriform ophthalmia well illustrate the differences between arterial and venous depletion in the treatment of inflammation. An eye injected with red vessels, will be suddenly relieved by opening the temporal artery, and the conjunctiva will become quite pale, inducing us to suppose that the inflammation is subdued. I have generally found, however, that sooner or later, even in a few hours, the inflammation returns; and others have made the same remark; whereas, if a vein in the arm be opened, and blood taken to the full extent, the good effects of such depletion are permanent.

There is, therefore, a distinct and important difference between the changes which take place in the action of the vessels of a part, when blood has been taken from an artery or from a vein, and it explains the difference in the effects which I have always found when those two modes of abstracting blood have been employed.

It is also extremely probable, that there will be a variation produced according to the kind of blood which is taken away—that the removal of a pint of arterial blood will produce a different effect on the system, from the removal of the same quantity of venous blood. What these differences are I cannot pretend to specify; but one proof that the abstraction of venous blood is the more useful in the cure of disease is, that in those natural or "spontaneous hemorrhages" which are so salutary, such as those from the nose and hermorrhoidal vessels, the blood which is discharged appears to be chiefly venous. Where leeches and cupping are had recourse to, they no doubt remove both arterial and venous blood at the same time; so that the circumstances under which these operations are performed do not furnish us with any opportunity of discriminating between the comparative effects of the abstraction of venous and arterial blood.

Another point which ought to be borne in mind, when weighing the advantages of abstracting arterial and venous blood, is, that the temporal arteries, as they pass over the zygoma of the temporal bone, can only be once opened at the proper point for the operation. For arteriotomy is not like venesection—the wound made in the vein, when united, leaves the canal of the vessel entire; whereas, when an artery is opened, it is requisite, after taking the necessary quantity of blood, to divide the vessel completely in order to allow it to retract, that the bleeding may be stopped; for it is improper to attempt this by compression alone. The canal of the artery becomes, therefore, by the operation of arteriotomy, completely obliterated, and as the circulation is afterwards carried on by a greater or less number of enlarged anastomosing branches, neither the original trunk nor a branch of sufficient calibre will be found in the temporal region, on which the operation of arteriotomy can be repeated, should such a measure be ever deemed necessary.

There is no question which the practitioner has more frequently to ask himself, when treating particular cases of inflammatory disease, than whether *general* or *local* bleeding ought to be employed. As far as I know, this most important question has not been explicitly answered, nor have such distinct rules been laid down by any author as will serve to guide the young practitioner; though the practice of different judicious men on this, as in most other practical points, will be found nearly to correspond.

Now it appears to me, that there are certain indications which will, on all occasions, enable us to select, in the most decided manner, the one or the other of these modes of abstracting blood; but, before endeavouring to point out what those indications are, it will be necessary to explain what is usually understood by *general* and *local* bleeding.

There are few parts of the body from which blood can be abstracted locally, strictly speaking; for blood taken by leeches, or by cupping from the integuments covering a diseased organ, must often come from vessels which are not ramifications of, and have no direct communication with, the vessels of the diseased organ—the superficial and deep-seated vessels, both arteries and veins, being, in most parts of the body, branches from other trunks. Thus, blood taken from any of the branches of the external carotid, as the temporal arteries, for the treatment of diseases of the head, cannot be considered as a local bleeding, from the distant and circuitous connection which those vessels have with the internal carotids. Neither, for like reasons, can blood, taken from the parietes of the chest or abdomen, be considered as strictly a local bleeding in affections of the thoracic or abdominal viscera. The opening of a vein in the arm abstracts blood more directly from the jugular veins, as well as from the superior and inferior cavæ, than leeching or cupping the integuments of the temples, forehead, or those of the thorax or abdomen. What, therefore, has usually been considered as general bleeding, is a more local mode of taking away blood for the treatment of the various affections of the brain and those of the thoracic and abdominal viscera, than that which is usually resorted to, and commonly considered as a local mode of blood-letting.

Local, or "topical" bleeding, strictly so called, can, indeed, be only employed in a few organs, and in a few parts of the body. In the treatment of diseases within the cranium, topical bleeding can be accomplished by taking blood from the frontal vessels, or from the ethmoidal vessels, both of which come from the encephalon, and are branches of the internal carotid artery. It may be also taken from the vessels which pass through the mastoid foramen of the temporal bone, the veins communicating directly with the lateral sinus, and the artery being a branch of the occipital which goes to the dura mater.

As the frontal artery is a ramification of the ophthalmic, and as the ophthalmic artery comes from the internal carotid, and passes through the orbit to reach the forehead, blood taken from that

vessel must be a more local bleeding, strictly speaking, in diseases of the head and globe of the eye, than blood taken from the temporal artery, the temporal artery being a branch of the external carotid.

On this account, in diseases of the head, as well as in diseases of the eye, more particularly those affecting the internal parts of the globe, leeches applied on the frontal vessels give much more relief than is obtained by abstracting an equal quantity of blood from the temporal vessels, by leeches applied on the temples.

Bleeding from the nose, or epistaxis, may be also considered strictly as a local bleeding in congestions of blood within the head. In such hemorrhages the blood comes from the ethmoidal vessels, which are branches of the internal carotids, passing through the cribriform plate of the ethmoid bone, and ramifying on the Schneiderian membrane. I have frequently known affections of the head, which, after resisting general bleeding, and the application of leeches on the head, were instantly relieved by the spontaneous escape of even a few drops of blood from the nose. The effect of losing a small quantity of blood locally, is, indeed, often surprising. Of this I might give some remarkable illustrations. An instance of the kind to which I allude occurred in a lady, who, after employing local and general bleeding for a disorder in her head, applied to an itinerant doctor, celebrated for curing headaches. He introduced an instrument into the nose, by which he wounded the Schneiderian membrane, and produced a flow of blood; and the evacuation which followed completely cured the headache. It was in a case of this kind that Galen is said to have acquired much renown, by successfully prognosticating that a patient would have a flow of blood from the nose, by which the affection of the head would be relieved.

I have often thought that some mode might be contrived, by which an artificial flow of blood from the ethmoidal vessels could be produced—as there are, no doubt, many affections of the head which would be relieved by such an operation—or that leeches might be safely applied to the interior of the nostril.

A lady had long suffered from headaches; I advised her to apply leeches within the nostril. One was accordingly applied on each side of the septum, and her headaches were completely relieved. Another lady, after severe mental affliction, complained of uneasiness in the head, for which blood-letting was employed. She had frequent returns of the headache, and was always relieved by depletion, leeches being sometimes applied behind the ear, on the temples, or on the feet. On one occasion, when a sense of fulness continued in the frontal region, after trying the usual modes, I advised her to apply a couple of leeches to the nasal septum, and the bleeding had the happy effect of completely relieving her head. Subsequent to that period, she had occasional returns of headache, and she found that a small bleeding from the nose never failed to give a more decided relief than she had ever obtained from any other mode of blood-letting.

The practice of applying leeches within the nose is well exemplified in a patient who was under the care of Mr. Miller of Enfields. "A gentleman, fifty-six years of age, had for several weeks complained of a sense of weight and pain, extending along the forehead, particularly in the region of the frontal sinuses; purgatives, and leeches to both temples, were resorted to with little benefit, which led me to adopt the practice lately recommended by Mr. Wardrop, of withdrawing blood from the vessels of the Schneiderian membrane. I applied one leech within each nostril, which bled freely, and I had the satisfaction to find the patient, next day, completely cured."

I have now had frequent opportunities of testing the comparative advantages of the different modes of abstracting blood in affections of the head, and I am fully persuaded that the application of a small number of leeches, and these, on the lining membrane of the septum of the nose, is, in many cases, the most preferable mode of blood-letting, more particularly in those where the uneasiness in the head is limited to the frontal region; and also in cases of chronic inflammation of the eye, and inflammatory affections of the lachrymal sac. In all such cases I have repeatedly recommended patients to apply the leeches alternately on the nasal septum, and on the part adjoining the inflamed organ, and to compare the effects of each; the result of this has almost invariably been, that they have given a decided preference to the abstraction of blood from the nose.

Leeches applied behind the ears are well known to relieve affections of the head; a practical fact, satisfactorily accounted for by that vascular communication between the integuments behind the ear and the encephalon, to which I have already alluded.

Immediately behind the mastoid process, and near where the temporal and parietal bones unite, is situated the mastoid foramen, through which passes sometimes an artery, and always a large vein. The artery is a branch of the occipital, and goes to the dura mater, and the vein comes directly from the lateral sinus. It is, therefore, easy to explain how substantial relief should be obtained, in those affections of the encephalon where depletion is necessary, by the application of leeches behind the ears. I have employed this mode of bleeding very extensively, and I am satisfied that blood abstracted from these vessels is a most important mode of depletion, as well as blood-letting from the ethmoidal arteries, which I have also recommended in those affections of the head where such a system of treatment is proper.

A gentleman had complained of an uneasy feeling throughout the posterior part of the head, for which he had used a variety of opening and other medicines, during upwards of three weeks. I advised him to apply two leeches behind one ear. They bled profusely, and when I saw him the following day, he expressed his surprise at the complete relief so few leeches had afforded, and he remained permanently well.

Scarifying the palpebral conjunctiva, in the treatment of some

forms of ophthalmia, is also a means of abstracting blood locally, the good effects of which, after other modes of depletion have been unsuccessfully employed, are very striking; leeches have also been used for a similar purpose.

Leeches applied to inflamed gums give great relief, and so also do leeches applied to the mucous membrane of the vagina in cases of inflammation of the uterine organs.

Bleeding in the jugular veins is likewise a most useful mode of abstracting blood in affections of the head, particularly in children, where leeches applied to the neck are often dangerous, from the difficulty of controlling the bleeding, and where the veins of the arm cannot be easily opened.

I formerly had occasion to remark, that the most powerful means we possess for the treatment of diseases, produced their good effects by imitating the processes which nature herself employs. In no class of cases is the *vis medicatrix naturæ* more admirably exemplified, nor the propriety of local bleeding more distinctly pointed out, than in the benefit derivable from "spontaneous hemorrhages." Indeed, as I have already said, it is extremely probable that artificial blood-letting was first suggested, for the cure of diseases, by the beneficial effects observed to follow from spontaneous hemorrhages.

The effects of local bleeding from the hemorrhoidal vessels is exemplified in the spontaneous hemorrhages from *hemorrhoidal tumours*—many persons being in the habit of losing, and that sometimes too at regular periods, a considerable quantity of blood from those tumours: a circumstance which seldom fails to relieve some disturbance of the general health arising from congestion in the portal system. Hence the benefit of promoting such a discharge in those who may have been habituated to it, and the dangerous consequences which its suppression has been so often known to produce; it also points out the propriety of local bleeding, either when the hemorrhage is not sufficient to remove the symptoms of congestion, or when such symptoms come on, and are not followed by the spontaneous evacuation of blood.

Blood is sometimes discharged by the bursting of a varicose vein, which hemorrhage is always efficacious in relieving internal diseases; and Petit and others have recorded cases where it has taken place to an enormous extent.

Even in *malignant diseases*—such as cancer and fungus hæmatodes—the occasional hemorrhage to which such tumours are liable, though it may be sometimes too profuse, yet often has a salutary effect, and relieves the fulness of the vessels and the pain which frequently accompany these diseases. Hence the decided benefit which I have often found from the occasional application of leeches adjacent to schirrous tumours when there was much pain or tension.

The same extraordinary relief may be also observed from those hemorrhages which so frequently occur in *sloughing ulcers*, the discharge of blood subduing that violent inflammation which led

to the sloughing of the soft parts. It was observing the effect of hemorrhages in ulcers of this description which first led me to adopt what I have since found a most useful practice in sloughing sores,—that of abstracting blood, not only in order to arrest the local bleeding, but to subdue that inflammatory condition of the system which leads to the sloughing process.

The beneficial effects of local bleeding may also be observed when it becomes necessary to make an incision into an inflamed part. It is by no means uncommon to find that extraordinary relief is produced by the escape of blood from an incision made through the inflamed integuments covering an abscess, and that too under circumstances where the accompanying symptoms would not have indicated the propriety of abstracting blood in any other way.

A remarkable illustration of the good effects of a local bleeding of this description, I witnessed in a medical student who was under the care of Mr. Lawrence and Mr. Earle, and who had a most extensive and severe inflammation of the hand and arm, arising from a poisoned wound of the finger, received when opening a putrid body. He had been bled copiously, until the pulse had completely sunk; but still there was so much swelling, redness and pain in the arm, that Mr. Lawrence was led to adopt a treatment first proposed, and strenuously advocated, by Mr. Hutchinson, in erysipelas. The practice consists in making deep and extensive incisions through the inflamed integuments. This was done in the above case, and several pounds of blood were discharged from the wounds, which, in place of weakening the patient, as might have been expected, was followed by rapid abatement of all the severe symptoms, and certainly seemed to be the means of saving life.

The common practice of laying open sinuses while the adjacent parts are in a state of inflammation, owes its good effects entirely to the profuse bleeding which generally follows the incisions.

Similar relief may be observed from the flow of blood which takes place when free incisions are made through the inflamed integuments of a finger affected with whitlow, and by dividing the gums during dentition.

Independent of this relief from the bleeding of incisions, why should we not anticipate as much from the discharge of the serum, or sero-coagulable effusion, which takes place, into the cellular tissue of an inflamed part, as from the discharge of the effusion when it has become purulent? It seems to me a point well worthy of consideration, to determine whether or not in phlegmonous cases it would not be much more advantageous, where there is no rational expectation of preventing suppuration, to make a free incision through the inflamed skin at an early period, and before any pus has been formed. The evacuation of the sero-coagulable fluid effused in the cellular tissue, and deposited there previous to its conversion into a purulent fluid, along with the profuse discharge of blood from an incision made in the integument, would

not only produce great relief from pain, but would limit and check the future progress of the inflammation.

A girl, about ten years of age, had a large inflammatory swelling on the ulnar aspect of the arm, which was extremely hard and painful to the touch, and the integuments were of a bright scarlet colour. Though I could not distinguish any fluctuation, I was persuaded that by freely dividing the skin she must be saved a protracted suffering. I therefore made a free incision through the middle of the tumour. It bled most profusely, and I could not detect the escape of any purulent fluid with the blood. A poultice was applied, the inflammation and pain were almost immediately subdued, and the wound granulated and healed quickly.

In many cases I have witnessed beneficial effects from the local bleeding which often takes place after operations and wounds, though to avert or arrest which care is usually, though injudiciously, taken. I have often had occasion to point out the good effects of the loss of even very considerable quantities of blood during operations in preventing subsequent febrile symptoms and local inflammations. But it may be here noticed, that whatever quantity has been lost during an operation—however carefully the patient has been prepared before the operation—however attentive the surgeon may have been in securing with a ligature every bleeding vessel—yet, more or less, inflammatory action, accompanied by fever, may supervene, and a hemorrhage from the wound take place. Under such circumstances, little need be feared from the bleeding; and, before placing a ligature on any bleeding vessel, it will be wise either to have the wound exposed, and to allow a sufficient oozing in order to check the inflammation and the accompanying febrile symptoms, or even to take some blood from a vein in the arm for the same purpose. On one occasion I removed the greater portion of the lower jaw of a young woman, and she was so deluged in blood that bystanders conceived her recovery to be almost impossible. She remained many hours in a state of syncope; and I avoided giving her any stimulants, in the hope that the fearful wound would be more likely to heal by adhesion. But notwithstanding all precautions, in a few days she became feverish, and blood issued from a corner of the wound. I used no means to arrest it, and it stopped after a few ounces were discharged, completely alleviating all the inflammatory symptoms.

Whenever, therefore, there is any chance of bleeding from a wound, it is of great importance not to be too hasty in applying plasters and bandages—so that if any hemorrhage subsequently take place, all the pain and alarm of undressing the wound are avoided, and the bleeding vessel can be easily secured.

The observations which have been made are sufficient to point out the advantages to be derived from local bleeding, strictly so called. In the treatment of those diseases wherein blood-letting is to be employed, it is of great consequence to have some rules to enable us, on all occasions, to decide whether to make choice of a local or of general blood-letting. Now, it is an excellent rule, and

one which I will venture to say will seldom lead to error, always to employ general in preference to local blood-letting, in such cases of local disease or injury as are accompanied with, or have created, a disturbance of the general system. Whereas local bleeding ought to be employed in preference to general bleeding, when only local symptoms exist, or when only local symptoms remain, after the general symptoms have been subdued by previous general blood-letting. A person, for instance, receives a blow upon the head, which creates symptomatic fever: he is bled more or less profusely at the arm, until the febrile symptoms are subdued. A good deal of inflammation of the integuments, however, still continues; but, to remove which, leeches ought to be applied. The same observation may be made in the treatment of almost every disease, as well as injury, for which bleeding is necessary; and perhaps the most frequent error which is committed in the treatment of those diseases which require blood-letting, is, that local bleeding is employed where general bleeding, or venesection, ought to have been substituted. It is seldom that the reverse practice has been adopted, or that a patient has been copiously bled at the arm, in place of having lost blood by leeches or by cupping. There seems always to be a disposition, in patients as well as in medical men, to economise blood—venesection being commonly considered a more serious operation than cupping or the application of leeches; and hence the latter is generally, though often injudiciously, preferred. In many instances of persons who have repeatedly lost blood during an attack of illness, an error has been committed by commencing with local in place of general bleeding, the consequence of which is, that the disease is not so soon checked as if a copious general bleeding had been employed in the first instance. Moreover, by the necessity of resorting to a frequent repetition of local or general bleeding, the whole quantity abstracted for the cure of a disease greatly exceeds what would have been required, had the treatment commenced with one adequate venesection.

DISCOURSE III.

General Blood-letting—Indications for employing it—Of the Pulse—An incompressible Pulse—Other changes in the Pulse—Natural varieties of the Pulse—Changes in the Heart's Action—The local pain—Importance of the first Bleeding—Extent to which it ought to be carried—Effects of Syncope—Quantity of Blood to be abstracted.

Having endeavoured to point out the different modes by which blood may be abstracted *locally*, and having also illustrated the salutary effects of local depletion by references to the phenomena of spontaneous hemorrhages, various local inflammations, and congestions of blood, when they are not accompanied by any constitutional disturbance, we now come to the consideration of the subject

of *general* blood-letting, the indications which point out the propriety of employing it, and the quantity of blood which should be removed in the treatment of various diseases.

It was remarked in the last discourse, that whenever any local disease or injury has excited a febrile disturbance throughout the system, general blood-letting or venesection ought to be decidedly preferred to local bleeding, and the indications to which our attention ought to be more especially directed, in deciding on the propriety of general blood-letting, are the state of the heart and arteries, and the character of the local pain.

The leading symptom, by which the constitutional disturbance demanding venesection is indicated, will be found in the *quality of the pulse;* and, in deciding on the propriety of blood-letting, it is not always necessary that we should find the pulse frequent, or tense, or full, or hard, but to be on all occasions satisfied of the propriety of abstracting blood from a vein, whenever, in any complaint of an inflammatory type, or under circumstances such as those which often arise after operations, or from accidents, there is the least deviation in the pulse from the natural standard. No sooner have a few ounces of blood been extracted in such cases, than the pulse will be observed to "rise," as it is called, and to acquire volume and power; thus indicating the propriety of the measure.

There is nothing more uncertain than trusting to the qualities of the pulse, which are usually described as those which alone indicate the propriety of blood-letting; and we ought ever to be aware of the important fact, that, during an attack of inflammation, the pulse varies according to the organ which is affected, and is even different in inflammatory affections of different textures of the same organ—except in one particular character, which shall be presently pointed out.

The mere increase in the *frequency* of the pulse is a circumstance of little importance in estimating the propriety of blood-letting, compared with certain changes in its qualities; and, therefore, the usual practice of counting merely the number of pulsations, is apt to lead to an erroneous conclusion. In two patients, in each of whom the pulse beats 120 in a minute, the one may require to be plentifully bled, whilst the other ought to have cordials.

Little difficulty occurs in distinguishing those states of the system which require general bleeding, when diseases have made considerable progress, and when their symptoms and character have become distinctly developed. It is before they arrive at this period, and when medical treatment is most available, that their true nature is apt to escape detection; and there are many states of disease where substantial advantage is to be derived from venesection, but where, at the same time, it could not, perhaps, be affirmed, from the presence of any particular symptom, that inflammation did actually exist. "Inflammation, in some textures of the body," observes an intelligent writer, "is so obscure in the begin-

ning, so insidious in its progress, and so rapid in its termination, that, in all cases in which the surgeon hesitates respecting the necessity of bleeding, it is a wise plan not to deprive the patient of the benefit of the doubt, but immediately to proceed to venesection."

It is certain that there is a period of disease when bleeding is not only unnecessary but improper; and there is likewise a moment when venesection may be had recourse to with more advantage than at any other. To detect this precise period must, therefore, be of great practical importance. In those who have been wounded, or who have met with a severe accident, or on whom an operation has been performed, in all such cases the action of the heart and arteries, which is at first diminished by the general shock received by the whole system, should be allowed to recover, or reaction should take place, before resorting to blood-letting; and this rule applies generally to all inflammatory diseases. The chill, for instance, which a person receives from the sudden exposure to a change of temperature, and which lays the foundation of an inflammation in some of the internal viscera, produces a collapse of the whole frame, which is not followed, until after a certain period, by those inflammatory symptoms which require blood-letting.

The peculiar feeling in the pulse to which I have alluded, and which points out, almost universally, the propriety of venesection, is sufficiently well indicated, by the term "incompressibility." An incompressible state of the pulse may, I venture to say, be considered as pathognomic of inflammation, in whatever organ or texture that inflammation exist. I have already remarked, that each of the different textures of an organ, when inflamed, is attended with some peculiarity of the pulse. Inflammation of the dura mater—of the cerebral pulp—of the pleura—of the mucous membrane of the bronchi—of the pericardium—of the muscular parietes of the heart—of the serous membrane which lines its cavities—of the peritoneal and mucous coats of the intestinal canal—are each accompanied by peculiarities of pulse; but in all we can detect an incompressibility. For whether the pulse be full or small, hard or soft, frequent or slow, if with the point of one finger the artery be pressed at the wrist, we shall perceive with another finger applied to the artery beyond, and at the distal side of the first finger, that unless a very considerable degree of pressure be employed, the pulsation of the radial artery will not be entirely destroyed, but the sensation, as if of a fine thread, or hair, will remain.

This incompressible state of the pulse, indicative of the propriety of blood-letting, is illustrated in some of the subsequent cases; and we may often observe instances of persons being relieved from internal disease by profuse and spontaneous hemorrhage, and in whom no deviation in the pulse, from its natural state, could be detected, except as regards this feeling of incompressibility.

Attention to this quality of pulse, I can with confidence assert, has scarcely ever failed to guide me, in the use of phlebotomy, even

in otherwise doubtful circumstances; and a conviction of the accuracy of the observation has led me to adopt bleeding in many cases, where I could not otherwise have ventured to employ it, and where there were not present any of the ordinary indications of inflammatory action. It was this state of pulse which first pointed out to me the propriety of employing venesection in erysipelas—in cases of sloughing ulcers—in exanthematous fevers—in cases of poisoned weeds—in specific diseases—and in certain stages of several other affections, afterwards to be noticed, and where an opposite practice is frequently—nay, usually—followed.

In most of the diseases which have now been alluded to, by a superficial examination of the pulse, an impression is generally received that there is a feeble state of the system, and hence, in place of a depletive or antiphlogistic mode of treatment, wine, bark, and stimulating remedies, have been employed. But we can be readily satisfied of the results of these two very opposite modes of treatment in some of those diseases, by observing the practice in the different hospitals of this city, where patients, afflicted with similar ailments, are bled profusely by one practitioner, and by another get as much bark and wine as their stomachs can receive.

Though I have never observed an incompressible state of the pulse, without having found venesection to be an expedient measure; yet there are other qualities perceptible in the pulse which also indicate the propriety of blood-letting. A hard pulse —a firm pulse—a full pulse—a wiry pulse—an oppressed pulse, all, in their turn, either taken singly, or combined with other symptoms, more particularly local pain, hot skin, and white tongue, point out the propriety of employing venesection.

No power of discrimination requires more attention and experience than such a knowledge of the pulse as enables us to distinguish its various peculiarities, both in health and in disease. This knowledge entirely depends on the exercise and improvement of the sense of touch. Like that of sight and hearing, the sense of touch differs exceedingly in acuteness in different persons, but in all it is capable of improvement. We must not expect at first to be able to distinguish these nicer differences in pulses which are palpable to an experienced finger, any more than we could expect at once to be able to perceive the slighter varieties in the shades of colour, so easily discernible by a skilful painter. All the senses require tuition. We ought to practise, by feeling a number of pulses, both of people in health, and of those with disease, one after another; and by first observing strong contrasts, we ultimately become familiar with lesser differences in the pulse, all of which essentially assist in pointing out particular states of the vascular system.

Thus we shall learn that there is a great variety in the pulse of different persons in health—in the number of beats at the different periods of life, and at different hours of the day—that there is frequently a difference in the pulse of the two arms of the same person—and, moreover, that the pulsations of the heart and

arteries do not always correspond. The pulse, too, is usually found more frequent in women than in men; and in the morning it is slower than in the latter part of the day, its quickness being increased by the various bodily and mental stimuli. To all these differences attention ought to be directed, as points of great practical utility; and some men of observation acquire more perfectly than others the tact of acutely discriminating the varieties in the pulse, and of perceiving its varied changes, whether arising from disease, or from accidental temporary causes.

Magendie has given the following scale of the pulse, showing the difference in frequency between that of the infant and the aged —the quickness of the pulse gradually diminishing with our years.

At birth, the pulse is	130 to 140 in a minute.
One year, ...	120 — 130
Two years, . . .	102 — 110
Three years, . . .	90 — 100
Seven years, . . .	85 — 90
Fourteen years, . .	80 — 85
Adult age, . . .	75 — 80
First old age, . . .	65 — 75
Confirmed old age, .	60 — 65

Besides the presence of fever, local pain, and the state of the pulse, changes of the heart's action are important indications, in the use of bleeding, on which sufficient attention has not been generally bestowed.

The pulsations of the arteries, and those of the *heart*, will be often found not to correspond. I do not mean as to their number, but in their strength and other sensible qualities; and I may venture to assert, that generally in those cases where the pulse at the wrist is contracted and difficult to compress, the heart will be found to beat with increased vigour. Hence this vigorous action of the heart may be regarded as a useful guide in the employment of blood-letting, and when taken into account along with the incompressible state of the pulse, will afford additional confidence in deciding on a depletive system of treatment.

A knowledge of the heart's action can only be acquired, like that of the pulse, by an accurate examination of it in a number of healthy individuals, as well as those under the influence of disease; and we ought to make ourselves as familiar with all the peculiarities of the actions of the heart as with those of the pulse.

A young lady who had all the symptoms of cerebral inflammation, for which leeches had been applied to the head, still complained of headache, with great depression, hot skin, and other symptoms of fever. Her pulse was small and incompressible, though not frequent, and on examining the heart, to which I called the attention of the practitioner in attendance, he was surprised to find its action very tumultuous. Venesection was now employed, and whilst the blood flowed the pulse became more voluminous, and the heart's impulse was subdued. Syncope ensued after a few ounces of blood were

abstracted, and the patient recovered without any further depletion.

A lady, in a state of pregnancy, had been greatly debilitated, having vomited every kind of food and drink which she had taken for upwards of twenty days. I saw her at this period. She was emaciated, and so feeble that her recovery was, by those around her, considered hopeless. She had a distinct tenderness on pressure in the epigastrium, and her pulse, which gave at first the impression of great languor, on more minute examination was very contracted, feeling like a thread, and incompressible, while the heart's action was vigorous.

This state of the vascular system assured me that I should afford her relief by blood-letting, which was immediately resorted to, though with hesitation by other medical attendants. No sooner had a few ounces of blood flowed from the vein than the pulse began to rise and acquire volume, and upwards of twenty ounces were abstracted before its vigour was subdued. The effect of this treatment was, that with very small doses of the sulphate of magnesia, repeated at short intervals, the stomach no longer rejected food, the alimentary canal was unloaded, the patient's recovery was progressive, and she was delivered of a healthy child at the proper period.

In almost every case where venesection is necessary, there is present along with the disturbed action of the arterial system, some local pain, more or less severe. The degree of pain, whatever organ the inflammation may affect, is not however to be considered as a measure of the violence of the accompanying inflammation. On the contrary, persons often suffer severe agony when there is but slight inflammatory action; whereas, when the inflammation has arrived at its acme, the local pain often diminishes in intensity and becomes dull and obtuse.

Whilst it is expedient to have recourse to blood-letting when there is a fixed and unceasing pain, increased by pressure, and accompanied by an alteration in the pulse and in the impulse of the heart, it is of great importance to be aware, that though the local pain is usually alleviated, and the action of the vascular system subdued, by venesection, yet bleeding, whether local or general, must not be continued, or repeated, as long as the local pain exists. On the contrary, when all febrile excitement has been subdued by blood-letting, the pain which continues may be alleviated by a blister or by opiates, either taken singly, or combined with calomel or antimony.

A gentleman complained of an acute and unceasing pain in the head, accompanied with febrile symptoms, for which he had been copiously bled both by cupping and venesection, and the alimentary canal had also been freely evacuated. The pain in the head continuing along with much general disquietude, I was consulted. The pulse was now frequent, very easily compressed, and feeble; the skin moist and the tongue of a milky white; he complained of considerable pain throughout the head, great restlessness and no

disposition to sleep. I recommended him to take two grains of crude opium, and one grain every hour afterwards until he should be relieved. The first dose of the opium was soon followed by tranquillity, and, after a second dose, he fell asleep, awaking with the pain in the head and general restlessness quite subdued.

A lady was attacked with severe pains affecting the muscular parietes of the chest and abdomen, which had been occasioned by a sudden chill; leeches, cupping, a variety of sudorific and purgative medicines, calomel and opium, colchicum and blisters, had all been used with only temporary relief, and, after the lapse of some weeks from the commencement of her illness, I visited her. The pains in the muscles covering the posterior part of the chest were now excruciating on the least attempt at motion, the pulse was soft and frequent, the urine and alvine evacuations were natural—the skin was moist, the tongue considerably discoloured, the appetite was not much impaired. It appeared to me that no further benefit would be derived from more depletion, and two grains of crude opium with an equal quantity of the antimonial powder were given at bed time. This had the effect of producing a calm, refreshing sleep, and the medicine was continued for some nights, causing a gradual alleviation of the pain and a rapid restoration of the general system.

There is no maxim of the practical correctness and importance of which I am more fully convinced than that the loss of a certain quantity of blood at the *first bleeding*, is of greater utility in stopping the progress of inflammatory diseases when general bleeding is required, than the abstraction even of a much larger quantity of blood by several successive bleedings. I wish to be understood that, in place of taking a quantity of blood, say sixty ounces, at three successive bleedings of twenty ounces each,—performed within thirty-six hours,—an infinitely greater degree of relief will be derived from taking two-thirds of that quantity at one bleeding. Not only will the progress of the disease be thus more quickly and decidedly checked, but the patient will be saved the loss of twenty ounces of blood.

The good effect of abstracting so large a quantity of blood at the first bleeding might be expected, without adopting any preconceived opinion or theory on the subject; for, as we have been taught by experience, that the great benefit of abstracting blood is derived from the sudden change which such depletion produces on the action of the heart and arteries, it is evident that such change must be effected in a more decided manner by abstracting a quantity of blood at one bleeding suddenly, than by taking away an equal quantity slowly, and at more or less distant intervals.

In almost all cases where bleeding is employed, there is a disposition on the part both of the patient and by-standers, and often too of the medical attendant, to be as sparing as possible in the evacuation of blood; whereas in the generality of cases an effort, I am convinced, should be made rather to take away as much as the

patient can bear, and not to desist until there be rational grounds to expect that a second bleeding will not be necessary.

A useful general guide for judging of the quantity of blood to be abstracted, will be found in the change produced in the action of the heart and arteries. The effect, however, of the abstraction of blood in relieving local pain, whilst the blood is flowing from a vein, is not to be entirely disregarded, though the only unerring criterion, as far as I have been ever able to discriminate, is that of the change produced in the *pulse*. That change in the pulse which marks the propriety of not carrying bleeding any further, is the absence of the "incompressibility" which has been already mentioned. This state of the pulse, however, does not usually subside until fainting or syncope supervene, in which case the pulse ought to be carefully watched after the fainting goes off, when it will be sometimes found that the sensation of incompressibility soon returns. If this takes place, more blood ought to be immediately drawn, and its abstraction persisted in, until the peculiar feeling of incompressibility is entirely subdued.

A young athletic officer complained of an intense pain in the head accompanied with such depression that he could with difficulty remain in the erect posture. His pulse was not much altered, but there was a degree of incompressibility in it which pointed out to me the propriety of venesection. Upwards of forty ounces of blood were abstracted before syncope came on. When I visited him two hours afterwards, I found that he had recovered from the state of fainting, but a degree of incompressibility of the pulse still existed. The bandage on the arm was reapplied, and upwards of twenty ounces more blood were abstracted before the fainting state returned. These bleedings were followed by a complete relief of the pain in the head, and after the free use of purgatives, calomel, and antimony, he permanently recovered.

When a large quantity of blood is not taken away at the first bleeding, or at a second depletion quickly succeeding, I have generally found that on all future occasions it is seldom practicable to abstract any considerable quantity, howsoever necessary it may appear; and thus it is, that when copious bleedings are not employed at the commencement of the treatment of inflammatory diseases, and if the patient afterwards recover, it has generally been from the employment of a great number of small bleedings.

A young lady, at the commencement of an attack of peritonitis, had been three times bled in small quantities, and local as well as general bleedings were afterwards repeated whenever pain and febrile symptoms recurred; these were carried, on each occasion, as far as the pulse could bear, and always with relief. Yet she was bled, locally and generally, no less than seventeen times, before the progress of the disease was altogether arrested. I have long been of opinion, that it is only those cases where bleeding has been too sparingly used at first, wherein it is ever necessary to carry depletion to a great extent: and moreover it is only such cases wherein the pernicious effects of bleeding are exemplified.

It may also be mentioned that the decided and remarkable advantages to be obtained from the first bleeding, are strikingly illustrated by the practice of many intelligent veterinarians; and I had, at an early period of my life, frequent opportunities of observing the treatment of the inflammatory diseases of domestic animals, from which I obtained much confidence in applying similar rules of practice in the treatment of the diseases of the human body.

It has been laid down as a common rule for the treatment of inflammatory diseases, that blood should be abstracted until *syncope* is produced; by which we might be led to suppose that the fainting was either a certain token of the quantity of blood that should be taken away, or that it was the act of syncope itself, and not the loss of blood, which was to cure the disease.

Hence we often hear of persons being bled until they fainted, as a proof of the vigour of the practice which had been employed, without considering whether the fainting had been produced by excessive depletion, or from the particular position of the patient whilst the operation was performed. Suppose two individuals similarly affected, and in every respect in the same state, one of whom is bled in the erect posture until he faints, whereas the other faints from the loss of blood whilst he is recumbent. In the first patient the syncope will probably be produced by losing one half of the quantity necessary to be removed before the second patient falls into a state of syncope.

In having recourse to venesection it is, therefore, important to consider whether the purpose of the operation be to abstract a certain quantity of blood from the system, or merely to produce syncope. When it is desirable to make a person faint with the loss of as little blood as possible, as, for instance, for facilitating the reduction of a strangulated hernia, or dislocated bone—then venesection ought to be performed in the erect posture. But for the abstraction of a certain quantity of the sanguineous fluid, in the treatment of diseases requiring depletion, fainting ought not to be considered as an index of the quantity of blood proper to be withdrawn; but the usual means should be taken to avert its occurrence, except when the patient is in a recumbent posture at the time the venesection is performed. Indeed when employing bloodletting for the cure of inflammatory diseases, we ought to be particularly cautioned against placing too much confidence in the idea that, if we have bled a patient *ad deliquium*, we have carried the bleeding to its full and necessary extent. On the contrary, when, in any case, syncope has followed the abstraction of an unusually small quantity of blood while the patient was in a recumbent position, then we ought, in one or two hours, again to examine the patient, when probably it will be found that the action of the vascular system has renewed its vigour, and the inflammatory symptoms continue, so that if blood be again allowed to flow from the vein, a very copious bleeding will sometimes be requisite to reduce the pulse.

This "premature" state of syncope, as it may be designated, not

only arises from the patient's being bled in the erect posture, but is sometimes the effect of a moral influence, and, therefore, when under such circumstances the fainting state goes off, the inflammatory symptoms may soon reappear.

A gentleman was seized with severe pains in the bowels, accompanied by a good deal of tenderness on slight pressure, along with some degree of febrile excitement. On opening a vein in the arm, only a few ounces of blood were removed, when the pulse sunk and he fainted. I visited him about two hours afterwards, and having recovered from the state of fainting, but not having experienced any relief, I again applied the bandage on his arm. Blood flowed freely from the wounded vein, and he did not fall again into a state of syncope, until he had lost about thirty ounces of blood; and this, along with purgatives, was followed with permanent relief.

It is not unusual, particularly in this metropolis, for medical men to give to others instructions to take a certain quantity of blood from a patient, with the same degree of confidence as they would prescribe a particular dose of some drug. Nothing can be more absurd in principle, and more injurious to the sick, than such a custom. The only indication to direct us in measuring the quantity of blood which ought to be abstracted in individual cases, is the change produced both on the pulse, and in the local pain experienced during the operation. We ought, therefore, never to hazard any preconceived opinion of the quantity of blood which it may be necessary to remove in any particular patient, but sedulously to watch the effects of the evacuation whilst it is proceeding.

It often happens, that a pulse in which little deviation from the natural state can be detected, and which deviation, considered singly, might not particularly indicate the necessity of bleeding, begins to rise, and to acquire vigour after a certain quantity of blood has been lost, its force not being subdued until a large quantity, and a quantity much greater than could have possibly been anticipated, is removed. On the other hand, we frequently meet with examples of disease where the very reverse happens, and where a person, apparently of a full habit, with a strong elastic pulse, becomes quite depressed after losing but a very small quantity of blood. It is, indeed, with bleeding as with purging—some persons not appearing to be lowered even by the most active purge, while others are greatly depressed, and the whole system apparently deranged, by the operation of a brisk purgative.

It is singular how small a quantity of blood some persons can lose; even the very impression on the mind that blood is to be abstracted causes sickness, and fainting comes on after a few ounces of blood have been removed. In such cases, however small be the quantity which is evacuated, there is often a decided relief —the syncope sometimes causing even a permanent subsidence of inflammatory symptoms.

If the observations which I have made be correct, surely no one should pretend to specify beforehand the precise quantity of blood

which any patient requires to lose. How little, therefore, must that practitioner consider the well-being of the sick, who, instead of performing the operation himself or witnessing its effects, ventures to *prescribe* the loss of any particular quantity of blood! Such conduct calls for the severest animadversion. And if the report be true, that practitioners have allowed their patients to remain several hours in a state of great suffering or even in a fit of apoplexy, rather than themselves perform the operation of venesection, it is only surprising that the legislature has not interfered—just as the law punishes those whose want of skill or whose neglect is the cause of injury to persons who are placed under their care.

In forming an opinion of the probable extent to which bleeding should be carried in different instances, we ought to be aware that, in general, fat people can lose much less blood than lean persons, and large and robust individuals do not require the same extent of depletion in inflammatory diseases, as those who are thin and appear to be more delicate. So it is with respect to age, the young and plethoric often bear much less bleeding than the old and thin.

To prevent, therefore, being guided by any preconceived notions on this point, I am always in the habit of letting the blood flow into a large basin, and allowing no other circumstances to influence me in estimating the quantity to be removed, than the abatement of the local pain, and the changes in the action of the heart and pulse, to which I have already alluded. With these, I may almost venture to say, guides unerring, and after observations on numerious examples of diseases apparently similar, it is extraordinary to remark the difference in the quantity of blood which it is necessary to remove for the cure of different cases.

DISCOURSE IV.

Quantity of blood to be abstracted, continued—How to be estimated—Syncope—How beneficial—Copious natural hemorrhages often not injurious—Blood-letting, when to be repeated—Differences in the condition of the Blood.

In the last discourse I dwelt more particularly on three points:—the peculiar *incompressible* state of the pulse which, in conjunction with other symptoms, indicates the propriety of general blood-letting;—the importance of the *first bleeding*, and the almost insuperable difficulties which are often to be overcome when this first depletion has been too sparing;—and, lastly, I endeavoured to point out the propriety of abstracting blood until a state of fainting or *syncope* supervened, in all those cases wherein venesection is decidedly preferable to local bleeding.

We are now naturally led to enquire—What is generally the quantity of blood which it is necessary to abstract at the first bleeding, in order to produce fainting? Such, indeed, is the variety of

the constitution of individuals—such the difference in the severity of disease—and such the variations in the period when called on to treat particular cases, that, whilst in some the pulse sinks after the removal of but a few ounces of blood, depletion must in others be carried to a great extent before syncope is produced.

When employing venesection, and observing the indications which have already been pointed out in order to regulate its extent, it will be generally found that the quantity of blood which can be removed before fainting comes on, is, in fact, not more than is requisite for the cure of the disease. Hence a person in health usually faints from the loss of a comparatively small quantity of blood, whilst the same individual, after suffering even a few hours from active inflammation, may require to lose an almost incredible quantity, before he falls into a state of syncope—a quantity, however, essential for the cure of the disease. I have also observed, with regard to *leeches*, that the quantity of blood which flows from their bite varies according to the degree of congestion in the vessels of the part to which they are applied, and, likewise, according to the necessity or propriety of such a quantity being removed. Hence blood often flows for many hours after the first application of leeches, whilst an equal number applied at a subsequent period, when the disease has been greatly subdued, yield comparatively a very small quantity of blood. This difference must doubtless depend on the different condition of the vessels at the different times the leeches are applied; and so it is with regard to venesection: a large quantity of blood may be taken away at the first bleeding before syncope is produced, whilst, at every succeeding operation, fainting comes on from the loss of a smaller and still smaller quantity.

If we are to be guided in the employment of blood-letting by the principles which I have been endeavouring to inculcate, it will readily be conceived that there must be great difference in the quantities of blood abstracted in different examples even of the same disease; and whilst, in some instances, we shall be disappointed with the smallness of the quantity which flows from a vein before syncope supervenes, in others it is surprising to what an extent the depletion may be carried, with the happiest results. Hence the difficulty of attempting to give any thing like a precise idea of the quantity of blood which patients require to lose for the treatment of particular diseases. It would be no less absurd to attempt specifying the quantity of purgatives or diaphoretics necessary to complete the cure of a fever! The best general notions on this point can only be attained by observing the quantity removed in a series of cases wherein blood-letting has been judiciously employed.

In the army and navy, where inflammatory diseases assume a very severe type, surgeons are in the habit of abstracting thirty, forty, and sometimes even more than fifty, ounces of blood at the first bleeding; and where the treatment is thus energetic even at its commencement, from one to nearly two hundred ounces of blood

have frequently been removed before the disease has been subdued. But amongst those classes of the community where the physical frame is slender, the loss of a comparatively small quantity of blood is found sufficient to relieve and check inflammatory diseases. There is an observation which I would here venture to make as the result of my own experience, as well as from the many opportunities I have had of witnessing the practice of others —that, of a considerable number of persons bled for inflammatory diseases, those who have lost the largest quantities of blood, by the fewest operations, have made the most rapid recoveries; whilst those who had been more frequently bled, and had lost even a greater quantity of blood, have recovered much more slowly, and have had, more frequently, some permanent structural change of the affected organ.

The state of fainting—which I have already endeavoured to point out as an unerring criterion for estimating the extent to which blood should be removed in those cases where general bleeding is most expedient, such as in inflammatory diseases attended with febrile disturbance, and in congestions affecting the vital organs—is, by most practitioners, taken as a guide; and though some have argued that a state of syncope thus caused may be pernicious and even dangerous, I have neither met with, nor have I ever heard of, cases where general bleeding judiciously resorted to and carried so far as to produce syncope, was followed by any serious mischief.

In considering this point we ought carefully to discriminate between those cases where the bleeding has been employed as a curative means, and those wherein a profuse hemorrhage has taken place from wounded vessels, as from accidents, or from a partial separation of the placenta. In these hemorrhages the bleeding may not only produce syncope, but such may be the size of the wounded vessels, that the blood will continue to flow until life is nearly, or even sometimes completely, extinguished. But in the operation of taking blood from a vein, its flow can and ought to be arrested whenever syncope takes place; and surely no surgeon ever attempted to persevere in continuing to abstract blood from a person in this condition. On the other hand, the state of fainting is to be considered as an index of the quantity of blood which is necessary to be removed for the relief of the disease; and, as I have already said, it will always be found that the quantity is in the ratio of the propriety and necessity of abstracting it.

Though it has been stated that in no case of syncope produced by venesection have I ever witnessed any subsequent pernicious effects, yet in some cases it has been carried to the very last extremity, the consecutive symptoms having caused great alarm to the by-standers as well as to the operator. Such cases, however, must be truly rare; for, accustomed as we are daily to hear of persons being bled to a great extent, yet such alarming effects seldom happen: and it ought also to be recollected how many hundreds, or even thousands, of persons in this community are

bled every day, and how few accidents of any description ever occur.

The most alarming effect of syncope from venesection I ever saw took place in a medical person, who had an attack of inflammation of the brain, and for which he had been repeatedly bled, both by venesection and leeches, but in small quantities and without relief. His condition was characterised by a dull unceasing pain in the head, which did not influence the intellectual functions, but was attended with great intolerance of light, sound, and motion. The pain becoming more intense, though his pulse was so natural in frequency and apparently so feeble as to discourage his attendant from repeating the bleeding, yet he could himself detect an incompressible feeling in it, which peculiar feeling he considered to be an unerring index of the propriety of venesection. His attendant, contrary to his own opinion, however, again opened a vein, and after a very few ounces of blood were abstracted the patient became faint, which caused the removal of the bandage. When he recovered from this state, which soon happened, and was able to apply his own finger to the pulse, he could still distinguish its incompressible character; and, experiencing the fixed pain in the head, he entreated his friend to replace the bandage. This done, a very large quantity of blood was removed before he again fainted, and the syncope was so complete that he remained insensible upwards of five hours. During this period those around him were in the greatest apprehension, the powers of life being so exhausted,—the pulse could not be distinguished at the wrist, and the respiration could hardly be recognised. Such, however, was the effect of this protracted state of syncope on the disease in the head, that when the patient awoke, as it were into life, and was able to articulate, his first expression was, that the pain in his head had vanished, and that his pulse was completely subdued. This patient's subsequent recovery was speedy and complete, requiring no further remedial means—and in about six weeks his health and strength were perfectly restored.

This interesting and no less instructive case demonstrates, in the most striking manner, how completely inflammatory disease can be not only arrested but subdued, by producing a diminution of the heart's action; and it also shows how, in the treatment of diseases, though a very moderate venesection may diminish the unnatural action of the vascular system, yet, when the depletion is pursued to the extent of producing syncope, the longer the duration of that syncope, so much the more completely will the inflammatory action be subdued. The state of collapse, as it is called, which antimonial preparations produce by their influence in diminishing the action of the heart and arteries, subdues inflammatory disease on the same principle as the abstraction of blood.

In a few instances I have observed persons recover from inflammatory affections, whose vital powers appeared so reduced as to render their condition apparently hopeless, but which low state ultimately seemed to be the very means of arresting the disease.

A girl, about ten years of age, had suffered severely from hooping-cough and congestion in the brain, for which the depletive system had been adopted; and such was ultimately the state of debility to which she was reduced, that she was apparently lifeless, and surrounded by her parents bewailing her approaching dissolution! Without a shadow of hope, I poured a spoonful of wine into her mouth, and instructed the attendants to give beef-tea and wine alternately, and at short intervals. Considering any further professional attendance unnecessary, and calling the following day on the other medical adviser, requesting him to get permission to examine the body, think of my surprise, when with a smile he informed me that the patient was doing well, having recovered every hour after the exhibition of the cordials!

Cases of this description ought to teach the propriety of never ceasing to lend our assistance, for the purpose of prolonging life, however slender it may appear; and I am confident it not unfrequently happens that the state of great debility or collapse, in which we may occasionally observe those who have severely suffered from febrile diseases and large depletions, becomes the very means of checking the progress of the disease. Such an effect is most to be anticipated, even when life has been apparently nearly extinguished. In the diseases of children, more particularly when the vital powers have been greatly exhausted, and the child refuses his food, I have frequently known instances of infants in this state, and life despaired of—no endeavours being made by the parents to prolong existence—where the vital powers of the child were resuscitated by forcibly separating the teeth and forcing cordials into the mouth, taking great care that the fluid was conveyed by the spoon to the root of the tongue. The truth of the common maxim, that "whilst there is life there is hope," is here strikingly exemplified.

From a general impression that blood-letting ought not to be employed but in diseases of a serious character, and that it is a remedy from which much mischief may ensue if carried to too great an extent, or employed in improper cases, it is, I am convinced, on many occasions too tardily resorted to, and too sparingly used; whilst we every day see medicines, the effects of which may be highly injurious to the constitution, fearlessly and carelessly exhibited. That a dread of blood-letting is not founded on sound observation, is demonstrated by noticing the effects of spontaneous hemorrhages and of profuse bleedings, so often the consequence of injuries, and also in diseases where they accidentally take place.

Alarming hemorrhage sometimes ensues during or after operations; and it is important to remark, that those patients recover most speedily, and have much less fever, in whom such a large quantity of blood has been lost.

In the spontaneous hemorrhage from mucous membranes, as those from the nose and rectum, it is extraordinary what large quantities of blood often persons lose with no other sensible particular effect than more or less debility.

A man was admitted into the Hospital of Surgery with dropsy, which he expected would be relieved by tapping. A few hours after his admission, he was seized with bleeding from the nose; and, although his pulse was feeble and his skin cold, having already lost not less than two quarts of blood, I bled him at the arm, after which the bleeding from the nose ceased. But the particular circumstance in this case was, that, notwithstanding the great loss of blood, his pulse on the following day became firm and wiry, and was accompanied by pain in the abdomen; he was, therefore, again bled at the arm until he became faint. On the second day the pulse rose, and he was bled a third time, after which he was tapped, and got a large dose of calomel and opium. This treatment had the effect of completely mitigating his sufferings. Calomel and squills were then given, until his gums became tender. He left the hospital, fourteen days after his admission, completely relieved, and a few weeks afterwards I saw him in perfect health.

The quantity of blood which some persons lose from hemorrhoids is also extraordinary. I have known instances of delicate females losing daily from such tumours, on an average, from half a pint to a pint of blood for many months, and even years—a quantity which, compared with the largest quantities of blood ever removed by artificial means, appears astonishing; and the slight disturbance of the system, which such profuse hemorrhages occasion, seems indeed unaccountable.

Similar effects of the loss of large quantities of blood are exemplified in cases of varicose veins accidentally ruptured, from which immense quantities of blood have sometimes escaped, without any perceptible injurious consequences. Petit particularly mentions such cases.

Hemorrhage, to an enormous extent, sometimes happens on the field of battle, wounded soldiers having been often left apparently lifeless from loss of blood; and it is important to remark, that such of the wounded recover with unusual rapidity, from the complete check which is given by depletion to any consecutive inflammation.

Very extraordinary, also, is the quantity of blood that females sometimes lose from the partial separation of the placenta, yet, generally, without any other bad effect than temporary debility. Women under such circumstances have been known to lose several quarts of blood in a few hours!

These facts, taken collectively, prove to what an extent blood may be lost, without being followed by serious consequences; and the practical conclusion to be deduced from such facts is, that blood-letting may, when judiciously managed for the cure of disease, be extensively employed.

Though, in the generality of cases, much depends on the full quantity of blood being abstracted at the first bleeding, as well as on resorting to blood-letting in the early stages of disease, still there are other instances wherein the complaint can only be cured by the frequent repetition of venesection.

The frequent repetition of blood-letting is rendered necessary by various causes. In some instances it becomes requisite in consequence of a fainting state coming on after only a small quantity of blood has been taken away; and, in other cases, when the pulse sinks after a very moderate quantity has been removed.

But when, from whatever cause, the quantity of blood abstracted has been small, it ought to lead to the more close watching of any return of the symptoms, and prepare us to repeat the bleeding.

Now, it frequently happens that, on the repetition of the venesection, the cause which prevented the first depletion from being made sufficiently copious no longer exists—so that, at the future bleeding, any quantity of blood which may be deemed necessary can be readily abstracted.

But the most frequent cause which renders a repetition of venesection requisite is, that, to whatever extent the first bleeding may have been carried, one depletion is seldom sufficient to check the progress of a severe attack of inflammation, particularly in an important or vital organ.

Always bear in mind, that the more complete has been the syncope arising from the first bleeding, and the sooner the second bleeding is performed after the pulse has begun to rise, the less will be the quantity of blood necessary to be taken away at the second bleeding, as well as the aggregate quantity for the completion of the cure. After the first bleeding, therefore, the pulse ought to be closely watched, due attention being also paid to the other symptoms; and whenever the vascular system has begun to recover its vigour—which may take place in three, six, or twelve hours—then replace the bandage on the arm, wipe away the coagulum in the wound of the vein, and allow the blood to flow, until the strength of the heart and arteries be again subdued.

There are appearances which the blood presents, both whilst it flows from a vein and after it has been kept some time and allowed to coagulate, which appearances have been considered as affording criteria for regulating the quantity of blood to be withdrawn, and also for the repetition of the venesection.

In violent inflammations, the blood usually flows from the wound in the vein with great force; whereas, in other conditions of the system, the stream is comparatively slow. In the first condition, bleeding ought to be as profuse, as in the latter it should be limited.

The colour of the blood as it flows from the vein, also varies in different examples of disease, being in some very florid, or of a scarlet red, and in the others of a crimson red or deep purple colour. The first state of the blood indicates the propriety of bleeding, whilst the latter points out a state of the system where but a very moderate depletion is admissible.

The appearances which blood assumes after it has been allowed to stagnate, are also supposed to afford criteria for the repetition of venesection. The appearance of a buffy coat, and the comparative quantities of crassamentum and serum, have especially been

considered as an index of the existence of inflammation, and of the propriety of blood-letting.

Whilst all these circumstances are mentioned, I must at the same time repeat what was stated in a former discourse, when explaining the different changes of the blood, that *these* can never be a criterion for estimating the quantity of the sanguineous fluid which it may be proper to remove, whilst the blood is flowing from the vein, neither can any appearance of the blood after its coagulation guide us in repeating the venesection. The appearance of the buffy coat has been chiefly dwelt on as an important character of the inflammatory diathesis; but it has been already observed, that the buffy coat is not to be considered either as a certain test of inflammation, or as a safe index of the propriety of blood-letting. There is usually no appearance of the buffy coat in blood removed from persons affected with violent inflammations until the latter stage of the disease, and at the very period when the further abstraction of blood would be pernicious; in many diseases, on the other hand, where blood-letting is unnecessary or even hurtful, the buffy coat may be occasionally observed.

DISCOURSE V.

Causes of failure in Venesection; how to be remedied—Operation of Venesection—Different Methods of abstracting Blood; when to be employed—Venesection—Cupping—Leeches—Scarification.

In endeavouring to point out the indications by which the quantity of blood should be regulated, when blood-letting is had recourse to in the treatment of diseases, it has been taken for granted that the surgeon has it always in his power to abstract whatever quantity he may deem necessary. This, however, is not always the case, or, at least, the requisite quantity of blood is not always obtained without difficulty, and nothing is more common than to hear of patients suffering from not having lost a sufficient quantity of blood, it having been affirmed that it was impossible to bleed them to the desired extent.

I have always considered it a dangerous maxim to admit the possibility of such an occurrence; and have ever contended that any requisite quantity of blood can, by some means or other, be taken from every patient. Should the veins in the arm be inadequate for this purpose, then may the jugular veins, or the veins of the wrist, or those of the feet, be resorted to. Or, in cases of danger, and when no time ought to be lost, why should not an *artery* be opened? The most severe operations are daily performed in order to save human life, and surely a fellow-creature should not be allowed to die for want of losing a quantity of blood! In the *Transactions of the Med. and Chir. Society*, there is narrated a

case, wherein the necessary quantity of blood could not be obtained from the veins of the arm, and where the bold and decided practice of opening the *radial artery* was successfully adopted.

I recollect only one instance where I could not obtain, by venesection, the desirable quantity of blood; here, the patient became so extremely cold that scarcely any blood would flow from the wound—a circumstance which had happened to her on several former occasions.

It ought also to be remembered, that when neither venesection nor arteriotomy can be performed, a large quantity of blood may be abstracted by leeches or cupping. The French are in the habit of applying at one time from fifty to a hundred leeches in cases where we would employ venesection.

It will here be proper to allude to some circumstances which, from a want of due care in performing the operation of venesection, are frequently the cause of failure in procuring the requisite quantity of blood.

The operation of blood-letting seldom has that degree of attention paid to all its details which it so well merits; and although every one considers himself perfectly capable of performing so simple an operation, still it cannot be denied that it is often executed by one person much better than by another, being, indeed, after all, seldom perfectly well performed. The incision in the vein is either too small or unnecessarily large, or in too transverse or too longitudinal a direction—the bandage is applied too tightly or too loosely, or there is some circumstance essential to the success of the operation, however trifling it may appear, which has not been duly attended to. The assertion of the late Benjamin Bell does not go too far when he affirms, that "Whilst I have frequently seen every other operation well performed, I have seldom seen blood-letting, with a lancet, correctly done."

I would strongly recommend the study of his writings on this subject, and to take care, when performing the operation of venesection, that strict attention be paid to every step—that the largest and most superficial vein in either arm be selected—that the bandage when applied be neither so loose as insufficiently to compress the veins, nor so tight as to diminish the flow of blood through the arteries—and also that the inferior edge of the bandage be close to that part of the vein where the wound is to be made—that the lancet be perfectly sharp, and the wound in the vein be made sufficiently, but not too large, and have a proper degree of obliquity—that the patient be placed in a recumbent posture, having the arm resting upon a common hand-basin, one side of which will support the upper arm, and the other the fore-arm, and thus prevent his being fatigued; by this method of supporting and fixing the arm, the orifices in the skin and vein will also be kept in accurate correspondence during the operation.

All these circumstances demand attention in performing the common operation of phlebotomy; and as so much depends—even the life of a patient—on the prompt and successful manner in

which it is executed, we cannot bestow on it too much consideration.

When there is a probability that it will be necessary to repeat the blood-letting, the pain of making a new incision may be saved by simply anointing the lips of the wound—which prevents their being agglutinated. If this has been neglected, the bandage must be re-applied to the arm, and, when the vein has become fully distended, the agglutinated lips of the wound may be separated with a probe, or the head of a common pin, by which the blood will flow as freely as during the first operation.

Before our attention is directed to the comparative effects and to the comparative advantages of abstracting blood by each of the several different operations of venesection, arteriotomy, cupping, leeches, and scarifications, it is of importance to recall to mind those states of the system which require the use of this remedy.

I have already mentioned that whenever local inflammation exists to such a degree as to excite fever, venesection is then decidedly preferable to any other mode of abstracting blood. I have also endeavoured to point out what appeared to me to be the disadvantages of arteriotomy, and the few cases and particular circumstances to which that mode of depletion is applicable.

In all cases of local inflammation where the general system is not disturbed, leeches are to be preferred to venesection; whilst the operation of cupping holds as it were a middle place, being applicable in cases where there are no febrile symptoms, and where leeches might be employed;—as in local inflammations and congestions, and also in cases where the action of the vascular system is increased. In all inflammations and congestions about the head, cupping on the back of the neck and between the shoulders is a most useful mode of abstracting blood, and this operation is also particularly applicable for the removal of blood from the parietes of the chest and abdomen, in diseases of their internal viscera. Its use, however, is only admissible when it can be employed without exciting pain, and irritating the diseased organ. In such cases I have often seen cupping do mischief. For the same reasons cupping inflamed joints, or parts accompanied by external tenderness, is often injurious, so that in such cases leeches are decidedly preferable. Cupping is preferable in those cases where the application of leeches is followed by severe erysipelas of the skin, except in those cases where a counter irritation is desirable. The very circumstance of the cupping-glasses irritating the tender parts, and drawing blood to the place where they are applied, renders cupping an eligible mode of abstracting blood in cases of congestion, more particularly of the brain, the operation being, in such cases, performed at the nape of the neck. Cupping, however, is the least preferable mode of abstracting blood when the application of the glasses excites pain, and increases the influx of blood to the diseased part. Although, therefore, the operation of cupping may be, under many circumstances, an useful and even the most preferable mode of abstracting blood, yet it cannot be

denied that there are no cases where cupping can be useful in which all the essential benefits of abstracting blood by that operation might not be obtained either by venesection, or by leeches, or by a combination of both those methods. I have often remarked, that in this metropolis, where there are so many dexterous performers of this operation, patients, more particularly those subject to congestion in the head, are apt to indulge in a luxurious system of living, the bad effects of which they can always have readily but temporarily removed by cupping.

Leeches are by far the most eligible mode of *local* blood-letting in the generality of cases, not only because they procure the necessary quantity of blood from parts where the application of the cupping-glasses would cause pain and irritation, but also because, from the dexterity required to perform the operation of cupping, it is seldom well done, and cannot be commanded in situations and at times when leeches may easily be procured.

In the application of leeches, it is important to be aware that the bleeding from their wounds is never in the ratio of the number applied; and it is often surprising to find three or four leeches bleed as much on one occasion, as at least double the number on another. Usually, when a large number is applied, the blood flows most freely from a limited number of wounds, which continue to bleed long after the bites of the others have ceased. This probably depends on the principal vessels supplying the part on which the leeches are applied being wounded, and on those wounds which happen to be made nearest the heart bleeding more than those in the remote branches. The bleeding, too, from leeches varies much in quantity, not only according to the state of the circulating system generally, but also according to the degree of inflammation or congestion in the part where they are applied: and very remarkable is the difference in the bleeding from the same number of leeches on the same part at different times, the quantity diminishing as the fulness of the vessels is diminished. This fact coincides with the observations I made on the quantity of blood necessary to produce syncope in inflammatory diseases, which I remarked was always in proportion to the quantity necessary for remedying the disease.

I was consulted in the case of an old lady who had all the symptoms of hypertrophy of the heart, the impulse of which organ had become extremely vigorous, with excessive embarrassment in breathing. In place of venesection, I recommended the application of four leeches on the region of the heart. The leech-bites continued to bleed freely during fifteen hours, subduing both the unnatural vigour of the pulse and the action of the heart. Two days afterwards the same number of leeches were again applied, and, to the astonishment both of the patient and her other medical attendant, but a very small quantity of blood came away.

Leech-bites, moreover, bleed very differently at different seasons and in different states of the atmosphere,—over which we have no control. It is also of importance to keep in mind, when compar-

ing the effects of cupping and leeches, that advantages are derived from the long-continued fomentation of the affected parts to which the leeches have been applied, as also to the soothing influence of a poultice, which ought always to be used after the fomentations.

One disadvantage of the use of leeches is the difficulty of regulating the extent of the bleeding; but I have always observed, that the discharge from their bites usually depends on the degree of congestion of the vessels of the part to which they are applied, and that they seldom bleed more than is requisite. When it becomes from any cause desirable to put a stop to the bleeding, this can in most cases be readily effected by simply exposing the surface of the part to the external air, and allowing the blood in the orifices to coagulate. The usual practice of applying compresses and bandages, and heaping them on in proportion to the activity of the bleeding, tends to promote instead of checking the flow of blood.

I was sent for early one morning to visit a lady who had violently sprained her wrist on the preceding day, and for which she had been advised to apply leeches. They had bled freely all the evening, and so profusely during the night, that a variety of styptics, compresses, and bandages, were used, but without arresting the hemorrhage. The injury having been severe, and the pulse not being altogether subdued, I told her that she had not lost too much blood, and that the constant oozing from the leech-bites had been the means of preventing the accession of inflammation. The patient being alarmed, however, I thought it expedient to arrest the bleeding, and scarcely had the bandages and thick compresses been removed, all of which were soaked in blood, and the hand and arm exposed to the cool air, than the flow of blood began to diminish, and in a few minutes it had completely ceased.

When this simple means is not sufficient to stop the bleeding from a leech-bite, a small compress is to be applied not larger than a finger-nail, consisting of several folds of lint, directly upon the bleeding orifice, on which such a degree of pressure is to be made with the point of only one finger as shall be found sufficient to stop the bleeding; this pressure is to be steadily continued until all tendency to bleeding has completely ceased. I have never known a failure of this practice, except in a few cases where the hemorrhage arose from the blood wanting its usual coagulating power, and in some children, where from the leeches having been applied to the neck, and more particularly where the leeches were of a large size, the necessary degree of pressure could not be employed. In the first class of cases, touching the orifice with the nitrate of quicksilver produces an immediate coagulation of the blood, with which it mixes, and thus plugs up the wound. Caustic may be in like manner employed in hemorrhages from leech-bites in children, and Sir Charles Bell has, in troublesome cases of this kind, stitched the lips of the wound together with a fine needle and thread; or the needle may be allowed to remain for some hours in the wound, its thread twisted round it, as is done in

making the twisted suture, a firm and unyielding compress being thence formed on the wound.

Besides being a most powerful remedial means in the treatment of local inflammation, leeches are in a more especial manner preferable to general blood-letting in all cases of local injury previous to the accession of fever,—or after the febrile symptoms have been subdued by general bleeding. When a part is bruised, the whole frame receives a shock in proportion to the severity of the accident, and no sooner does the system recover, and reaction take place, than the bruised part becomes more or less tense and painful;—these symptoms indicate the commencement of inflammation. If, in this condition, a sufficient number of leeches be applied to the parts, the inflammation will be immediately subdued, and if they be again and again applied, without delay, and in numbers proportionable to the severity of the symptoms, or whenever there is any return of pain and swelling, we can thus completely check and subdue every inflammatory symptom, and avert all the evils of the accident.

A gentleman fell from his horse, and severely bruised the elbow-joint and surrounding soft parts. Leeches were employed immediately after he recovered from the shock occasioned by the injury, which, along with fomentations and poultices, afforded great relief; but cessation of the bleeding was always followed by a return of the pain and tension. More leeches were then applied, and so on; one or two dozen being repeated whenever the bleeding from the former wounds ceased and the pain returned, so that in four days one hundred and eighteen leeches were applied. The effect of this practice was, that in eight days this patient had completely regained the use of his arm, and, except the debility, from which he recovered in a few weeks, no bad effects ensued. In this manner, and on this principle, have I, by the repeated application of leeches, kept up a constant oozing of blood from injured parts, until every inflammatory symptom has been completely checked and subdued.

When this system of treatment is not employed early,—almost immediately after the effects of the shock have passed away, and when time is given to the inflammatory symptoms and a febrile disturbance of the system to supervene, then the treatment must commence with general bleeding, conducted on the principles which I have already endeavoured to establish.

Local bleeding, however, when employed even without unnecessary delay, after the receipt of an injury, is not however always sufficient to prevent the accession of febrile symptoms, more particularly when the injury has been severe, and the injured parts have an important function to perform in the animal economy. Hence it will be found a useful practical rule that, whenever in any case of injury, local bleeding is not sufficient to check the accession of fever, general blood-letting ought to be unhesitatingly adopted.

In no instance did I ever witness the good effects of this rule

more strikingly exemplified than in that of a medical gentleman who received an injury of the knee-joint of unusual severity. Whilst walking through a wood at a place where the branches were so numerous that he was compelled to stretch both his arms in order to hold up the gun with which he was shooting, one of his feet became entangled with a twig, and not being able to receive any assistance from his arms, he made a powerful exertion of his leg to prevent his falling. In making this effort, and being of an athletic form, the right knee-joint was wrenched so violently that he fell down, and it was not until the lapse of a considerable time that assistance could be procured and that he could be liberated from this situation, and conveyed home with great suffering, a distance of thirty miles. When I saw him, twenty-four hours after the accident, the whole knee was then greatly swelled, tense, extremely painful, and accompanied with violent spasmodic twitchings of the limb. But in place of any febrile excitement his skin was cold and his pulse was below the natural standard,—and he appeared not to have recovered the severe shock of the injury. Leeches were accordingly applied to the joint, which with fomentations and a poultice afforded no substantial relief. In ten hours I again visited him. The pain and spasmodic twitchings of the limb had now become agonising—the skin hot—and though the pulse was not increased in frequency, yet it had a contracted feel —there was a difficulty in compressing it, which decided me in opening a vein in the arm. The blood flowed in a very profuse stream, the pulse gradually acquiring vigour, and I determined to let blood escape until the pulse should be quite subdued; being impressed with the opinion that such was the extent and severity of the injury of the joint in this patient, that, unless the most energetic means were at once adopted to prevent the accession of inflammation, the limb would be placed in a state of great danger, and even the patient's life would not be altogether safe.

No less than seventy-four ounces of blood, by measurement, were abstracted before the pulse faded, and even then complete syncope did not supervene, but the patient remained for many hours in a condition which approached to fainting. In this state of prostration, and with the vigour of the organs of circulation quite subdued, did he remain four days,—every attempt to raise himself causing giddiness and a disposition to vomit. From the period of the venesection, however, the pain was alleviated, the swelling and tension of the joint gradually diminished, and no febrile symptoms ever recurred, and, excepting a few leeches which were applied to those parts of the knee which continued particularly tender with a poultice, no further remedial means were required The subsidence of the swelling though slow was progressive, and, except some portion of the parts around the joint which were torn, the patient got well; so rapidly indeed did he recover the effects of the enormous depletion, that in three or four weeks the prostration caused by the blood-letting, and the shock which the whole system received from this severe accident, were completely over-

come, and never afterwards was there any circumstance attending his recovery which could be attributed to the loss of such an unusual quantity of blood.

If, besides a bruise, there be a wound of the soft parts, the subsequent hemorrhage often effects much in checking the approach of inflammation; and hence, when wounds have bled freely, and when they have not been irritated by dressings and bandages, it is seldom that any inflammatory symptoms ensue, nor does any local or general bleeding become necessary.

When leeches cannot be procured, the requisite quantity of blood may be obtained by opening with a lancet one or more of the veins contiguous to the injured parts; and this mode of blood-letting is particularly applicable in injuries of the extremities, where there are so many veins sufficiently large and accessible. The advantages of applying leeches, which have been enumerated, are also to be derived from this method, in all local affections where the parts from which the blood is to be withdrawn are tender to the touch, and where any other mode of local blood-letting is inadmissible.

Leeches are also employed on a principle of *revulsion* as well as *derivation*, and hence they have been applied to the feet in affections of the head, chest, and abdomen. Whatever explanation be given, the good effect of using leeches at a distance from the affected organ in certain states of disease is indisputable, and this practice is particularly applicable in all congestions of blood. In affections of the head and thoracic viscera, where repeated small depletions are indicated, I have in many instances recommended patients to apply leeches on the head or chest, and on the feet alternately; and, when it has afterwards been requisite to repeat the bleeding, to make choice of that place for re-applying them which from experience was then ascertained to be the most beneficial. Almost universally, I may venture to say, a decided preference has been given to their feet. How often, indeed, do we see diseases in the head relieved by the discharge of even a few drops of blood from the hemorrhoidal vessels!

A lady had suffered during several months from violent cough, accompanied with difficulty of breathing, for which she had applied leeches on the chest, and a variety of remedies, without effect. When she consulted me, I recommended, besides other means, the repetition of the leeches, but advised her to apply them to the feet. Accordingly, four leeches were applied to each foot, and the relief was so speedy and complete that she required very little further treatment. The leech bites cause sometimes too much irritation, and are followed by such severe erysipelatous inflammation of the skin, that in many instances the disease for which the blood-letting has been employed, seems to be as much subdued by the counter-irritation caused by the leech bites, as by the sanguineous depletion—provided only that they have been applied at a distance from he diseased organ.

The powerful effects of applying leeches to the feet in relieving

congestion in the chest, was remarkably exemplified in the case of a gentleman who had been long subject to what was considered as an *asthmatic* cough, and which was particularly aggravated during the winter months. On one occasion he caught cold, and his breathing became much oppressed, accompanied with slight febrile symptoms. I advised him to apply four leeches on one foot. They bled freely, violent erysipelas supervened, which extended up the leg, and on the following day his chest was more relieved from a feeling of oppression than it had been for many months, and the cough was greatly mitigated.

A lady had long been subject to inflammatory attacks of the liver. I saw her with an excited pulse, great headache and pain in the side, dry and hot skin. Four leeches applied to one foot bled little, but were followed by a violent erysipelas of the foot and leg. In twelve hours, the pain in the side and violent headache were quite subdued, and afterwards, one grain of calomel, given every six hours for a couple of days, relieved all the symptoms.

There is no class of diseases where the effects of the local abstraction of blood are so well exemplified as in some of those of the eye, in which a quantity of blood may be taken from the conjunctiva by the operation of scarifying. The beneficial effects of applying leeches to the orifices of the different mucous canals, when depletion is required, are well established, and the operations of scarifying the conjunctiva, lancing the gums and tonsils, puncturing hemorrhoidal tumours, and making incisions in inflamed parts, all give relief on the same principle.

Scarifying the conjunctiva is a most useful operation, and one of the few methods we possess of abstracting blood locally, strictly so speaking. Simple as may be its performance, there are still several circumstances requiring nicety in the operation, and which are necessary for its success; and in the mode of its execution commonly adopted, instead of doing good, it often irritates and produces mischief. This operation was known to the Arabians, who performed it by inserting the serrated edge of the beard of the common barley into the conjunctiva, the wounds thus made bleeding more or less freely. But the most safe and efficient mode of performing the operation, is with a wedge-shaped scarificator, now in common use. The lancet is a very unfit instrument for this purpose.

The principle of this operation is, by wounding the conjunctiva, to get as much blood as possible. The wounds should only be made on the palpebral, and never on the sclerotic, conjunctiva; for when the vessels on the ball of the eye are divided, the operation invariably excites much more irritation than the loss of blood does good. The wounds, therefore, should be limited to the conjunctiva lining the eyelids, and it is only on the inferior lid that the scarification can be properly accomplished. The wounds, or scratches, should be made on that part of the membrane which is reflected over the cartilaginous tarsus—all its other portions are loose and unresisting, whereas on the tarsus the membrane is kept stretched,

and the cartilage affords a resistance sufficiently firm to admit of the ready division of the blood-vessels.

Before using the scarificator, we should completely evert the lower eyelid by the fore and middle finger of the left-hand, underneath the points of which is placed a thick dossil of lint; and this assists in keeping the lid everted, and in absorbing the blood, and, by compressing the lid on the lower edge of the orbit, the blood is made to flow much more freely.

The edge of the scarificator is to be held perpendicular to the surface of the conjunctiva, and the weight of the instrument is of itself sufficient to make the wound deep enough. One scratch—for it ought not to be an *incision*—along the tarsus generally answers the purpose, but several are sometimes necessary, and you can easily comprehend how one division of the same vessel should bleed as much as several. By retaining the compress, pressed moderately on the everted lid, it is often surprising what a quantity of blood is discharged, and the relief and benefit of the operation are generally in proportion to that quantity—just as was observed when speaking of the blood taken by leeches being in proportion to the turgescence of the vessels where they are applied.

It is worthy of remark, that the abstraction of blood by scarifying is never useful until the acute stage of the inflammation has passed. It is in the sub-acute, chronic, or passive stage, wherein such local depletions appear so decidedly useful. When the eye is suffering from an acute inflammation, the vessels of the palpebral conjunctiva are not much increased in number, appear chiefly arterial, and, when divided, yield scarcely any blood. But when the second stage of the inflammation ensues, there is a great increase in the number, and change in the colour, of the vessels—the arterial capillaries being diminished in number, while the venous are increased, so that the bright red colour of acute inflammation becomes of a more purple hue: in this state, blood flows copiously when the vessels are divided by the scarificator.

I may here remark, that the practice of applying leeches to the conjunctiva is one, the bad effects of which I have so often observed in the practice of others that I have never adopted it; they frequently create irritation, and there is an erysipelatous redness which sometimes follows the leech bite, which is very injurious.

DISCOURSE VI.

Injurious effects of Blood-letting—Immediately after Injuries—During an apoplectic fit—In particular cases of inflammation—In irregular distributions of Blood—In specific diseases.

Allusion has hitherto been made only to those diseases wherein blood-letting may be employed as the chief curative means; but there also is a class of cases wherein this energetic remedy ought to be used with much caution; and to these our attention ought always to be directed when contemplating the use of blood-letting.

There is one class of cases in which blood-letting is often very unnecessarily, and sometimes perniciously, employed. I allude to the common practice of bleeding persons immediately after an accident, or during an apoplectic or convulsive fit. In many accidents, more particularly where the head suffers, the first effects of the injury are a diminution or collapse of the vital powers; and if, under such circumstances, blood be abstracted, a still further diminution of these powers is produced. Hence it is not until the powers of life have revived, or a *reaction* has taken place, that we should, after severe injuries, employ blood-letting.

The servant of a medical society fell from a chair at the time of one of the meetings, and whilst still in a state of insensibility, surrounded with medical students, she was bled. It was at least fifteen months after that bleeding, although it was very moderate in quantity, before she recovered her natural strength. Many have suffered from a too early use of the lancet after accidents.

In cases of *apoplexy*, I believe that blood-letting has frequently been carried to a very unwarrantable, and even fatal, extent.

In proportion to the violence of an apoplectic shock, so are the powers of life diminished; and hence, if the quantity of blood abstracted be regulated by the *severity* of the symptoms, in like proportion will the practice be hurtful by still farther diminishing the vital powers. When a person is in a state of insensibility from an apoplectic fit, those around are too apt to urge the necessity of bleeding, conceiving that the loss of blood will relieve the disease in the head.

It is, therefore, proper in all cases to allow the *shock* to pass over, and circulation to revive, before abstracting blood; and the quantity which is taken away ought always to depend upon the vigour of the heart's action.

A surgeon was sent for to see a patient, who had fallen down suddenly in an apoplectic fit; he immediately opened a vein, and after abstracting only a few ounces of blood, the pulse sank. When he visited this patient, several hours afterwards, he found the powers of life so feeble that he ordered him cordials, by which the action of the heart and arteries began to revive. Soon after this, however, a physician was consulted, and he *prescribed* a copious venesection, after which the patient sank rapidly, and in a few hours expired.

In cases where there are organic changes in the brain's structure, and when the sudden apoplectic attack is caused by some vessel of the *diseased part* giving way and pouring out blood, blood-letting is of no avail; and when had recourse to when the pulse is feeble, and the vital powers already much diminished from the shock, it never fails to hasten the patient's death: therefore, under such circumstances, blood-letting ought to be resorted to with great caution.

A lady considerably advanced in life was found during the night lying on the floor—her servant, who was in an adjoining apartment, having been awoke by the noise of her mistress falling out of bed. She was found perfectly insensible, and the pulse so languid that the surgeon who was sent for ventured to take only a few ounces of blood by cupping; her pulse never revived, and in four hours she expired. It was found that her death was occasioned by an effusion of blood into the ventricles, the heart and aorta being also diseased.

It is in cases of this description that blood-letting, even to a small extent, must, by diminishing the powers of life, prove injurious, and, if carried beyond certain limits, inevitably hasten dissolution.

A patient who had long suffered from an affection of the heart, and who had for many years complained of a fixed pain in the occipital region, suddenly tumbled down senseless, and when he endeavoured to rise, the left arm and leg had become quite motionless. On visiting him a few hours after this attack, I found his pulse so feeble and the powers of life so depressed that, in place of a depletive system of treatment, I recommended the use of ammonia and camphor—and what was remarkable in this case was, that the paralysed limbs gradually acquired their natural power, and in four days the paralytic affection was completely removed. Four months after the illness he was again suddenly attacked, and, his condition being considered apoplectic, he was freely bled and purged, and in about twenty hours he expired!

On opening the head a large clot of extravasated blood was found in the substance of the left hemisphere of the brain—and in the right hemisphere there was a large cavity which contained a small quantity of a dark coloured sanguineous fluid, not sufficient to fill it, and which no doubt was the remainder of the effusion which had taken place during the first attack. The arteries at the base of the brain were much dilated, and their coats considerably thickened. There was dilation of the left ventricle, its muscular parietes were thickened, and some portions of the semilunar valves were ossified.

It ought however to be kept in mind that there are cases of simple congestion in the brain, producing a sudden loss of the intellectual powers, and convulsions, in which too much blood can scarcely be removed to save life; but in such cases the pulse usually acquires vigour, or rises whilst the blood is flowing from the vein.

A general officer, of a full plethoric habit, and who had suffered occasionally from *gout*, took, in consequence of a slight pain in the great toe, a brisk purgative, and whilst walking on the following day, which happened to be unusually cold, he felt a chill, suddenly became giddy, and fell down in the street, senseless and motionless. I saw him in this state, but his pulse, though strong, was little changed. I immediately opened a vein in the arm, and the blood flowed freely through a large orifice; at first the pulse gradually acquired strength, and increased in frequency, but was not subdued until upwards of forty ounces of blood were abstracted, when he immediately became sensible to things around him. In this state he was removed to his own house, and in a very few hours the vigour of the heart and arteries revived, accompanied by uneasy feelings in the head, when about the same quantity of blood was taken away as on the former occasion. These depletions, along with an antiphlogistic regimen, were the means of producing permanent relief.

There are also individuals in whom the loss even of a very small quantity of blood produces great exhaustion and depression, and where it is impossible to carry depletion to the ordinary extent, even when such persons are labouring under inflammatory diseases. But we cannot possibly be aware of such constitutional peculiarities or idiosyncrasies, unless by previous observation on the patient.

A lady about the middle period of life, who had suffered much from bad health, was suddenly attacked by all the usual symptoms of peritoneal inflammation. I found her in great agony, with a fixed pain in the abdomen, great tenderness to the touch, a very rapid pulse, and other symptoms of fever. Having taken repeated doses of opium without relief, I opened a vein in her arm, and before five ounces of blood were abstracted, the pulse sunk and she fainted. When I visited her two hours afterwards, she had recovered from the state of syncope, her pulse had revived, but was very rapid and easily compressed. The local pain not having abated, the bandage was replaced on the arm, and scarcely had a couple of ounces of blood escaped when the pulse sank, and she again became faint. The pain in the abdomen not being relieved, after having recovered from the state of syncope produced by the second bleeding, I gave her a grain of opium with five of calomel every few hours, by which means the pain and other symptoms were rapidly subdued.

Another nice point to determine in the employment of blood-letting, occurs in those cases of inflammation where the powers of life are already so much exhausted from the duration of the disease, that though there may be a probability of the inflammation being subdued by a repetition of the bleeding, yet the exhaustion produced by any further depletion may of itself destroy life. Under such circumstances, in place of blood-letting, recourse should be had to those other means which art possesses to control the action of the heart and arteries. I allude particularly to the use of large

and frequent doses of the tartrate of antimony—to mercury combined with opiates—and to colchicum.

It also happens that, in cases where bleeding has been employed, the local pains accompanying the disease do not subside, and symptoms continue, or succeed, just as severe as those which preceded the venesection.

In such cases it is a difficult point to determine how far bleeding is to be carried; and there are some men of experience and observation very acute in perceiving those symptoms which can only be relieved by blood-letting, and those which may be removed by blisters, anodynes, mercury and opium, colchicum, and such like remedies.

Bleeding will also be found more or less injurious when employed in cases where there is merely an irregular distribution of the blood—or where there is an undue quantity in a particular part, without any increase in the quantity of the whole mass. Such cases are quite different in their pathological characters, both from those of congestion and of inflammation, and these *three* different conditions ought to be accurately distinguished.

In *congestion*, the quantity of the sanguineous fluid is increased, or the vessels are in a state of plethora, but in an *inflamed part* there is a change of structure going on, so that if an organ in a state of congestion be compared with one which is inflamed, and each macerated in water, the blood of the first is washed away, leaving the natural structure unchanged; whilst in the inflamed organ, besides an increased quantity of blood, there is a change in the structure of the organ, more particularly an effusion of a sero-albuminous or puriform fluid, into the cellular membrane. Where there is an *irregular distribution of the blood*, and an undue quantity sent to a particular part, such as the head or chest, there is a corresponding diminution of blood in some other parts, as the legs and feet, and it is in such cases where the abstraction of blood is useless and sometimes injurious.

We have frequently examples of irregular distributions of blood in affections of the head and chest. Persons suffering from bilious and aguish headaches, as they are called, often have a flushed countenance, and an increased action of some of the branches of the external carotid artery; but they are not accompanied by any of those changes in the pulse which indicate the use of blood-letting, and are marked by symptoms showing a diminution of blood in some other parts of the body, and more particularly in the limbs, by a painful sense of coldness in the legs and feet.

Persons who have often suffered from bilious headaches, accompanied with a flushed face, and for which bleeding has been ineffectually resorted to, may, however, have also feelings of uneasiness in the head which are of a different character, and of that description wherein bleeding is highly beneficial. I have known several serious errors committed from the practitioner not being aware of this circumstance, and treating a headache where there

was a congestion of blood like an ordinary sympathetic headache; and patients themselves, subject to headaches from derangement in the digestive organs, are apt to attribute every uneasiness which they may at any time experience in the head to the same cause.

The late Dr. Baillie frequently suffered from headaches connected with chylopoietic derangement; and on several occasions they were so severe, that he had been induced to try the effect of cupping, but from which he never experienced the smallest benefit. Perceiving one day some spectra or images floating before his eyes, accompanied by uneasy feelings in the head, he asked my opinion; and considering that these symptoms were of a plethoric character, and indicated congestion within the head, I recommended the abstraction of some blood. To this he at first objected, not having found relief from former bleedings; but on representing to him the difference in the character of the present symptoms, he consented to have a few leeches applied behind the ear, which gave such relief as to induce him to repeat their application on the following day. By this treatment the spectra disappeared, and he was perfectly relieved from all uneasy feelings in the head.

A gentleman, who had often suffered from what he called "blind headaches" during forty years of his life, consulted the practitioner who lived in his vicinity relative to some feelings in the head. Considering these symptoms to be unconnected with the "blind headaches," he advised him to be bled at the arm, which advice, however, was not followed. He consulted another physician, who recommended to him the use of the sulphate of iron; and a third, whom he afterwards consulted, recommended tonics, wine, and a generous diet! Having pursued this plan, and while he was on a visit to London some weeks afterwards, I was hastily sent for to visit him, and found that the left side had become paralytic, with symptoms of congestion in the brain, for the treatment of which he required repeated blood-letting.

In those diseases usually called *specific*, such as syphilis, cancer, scrofula, gout, and rheumatism, blood-letting is often injurious, though it is useful when employed under certain circumstances and within certain limits.

Whatever organ is affected with acute rheumatism, there are always present symptoms of an inflammatory type. Yet it is well established, that persons suffering from this disease cannot bear very copious bleedings, and their too frequent repetition has certainly, in many instances, laid the foundation of chronic affections of the joints.

The same observation applies to gouty inflammation in any organ. We find that, in some cases, a certain extent of depletion will mitigate the inflammatory symptoms attending gout, but if the depletion be carried beyond certain limits, it no longer alleviates the pain; the whole system seems to suffer, and the local disease is apt, as in rheumatism, to assume a chronic and unyielding form.

With regard to the use of blood-letting in specific diseases, I may here observe that there generally is not only the *specific* disease to contend with, but there is also more or less common or *idiopathic* inflammation accompanying the specific disease. It is only this *idiopathic* inflammation which ought to be treated by blood-letting—the bleeding has no influence in subduing the specific disease.

It is not uncommon to observe a specific inflammation, once excited, thus cause an accompanying idiopathic inflammation. In *syphilis*, for example, we find that, besides the primary ulcer, a great degree of inflammation of the adjacent parts sometimes supervenes, which inflammation is relieved by bleeding, and would be aggravated by the use of mercury. It is after this idiopathic inflammation is removed, that we can proceed to the cure of the specific disease by exhibiting mercury.

So it is in the treatment of *cancerous affections;* the tension and swelling accompanying a scirrhous tumour can often be relieved by general and local blood-lettings—and in proof that such bleedings are proper, under certain circumstances, may be mentioned the *spontaneous* hemorrhages to which such diseased parts are subject, and the effects of blood-letting in relieving certain states of plethora and congestion of the adjacent viscera.

The same remarks apply to the treatment of *gout*. When gout affects any part of the body, the inflammatory swelling and pyrexia, which often accompany it, are relieved by bleeding, but the bleeding has no influence on the specific affection; and hence the usual practice in the treatment of gout is, first, to subdue any local inflammation and febrile symptoms by depletion, and then, and not till then, to administer the specific remedies for the cure of gout.

In the treatment of *scrofulous* affections, blood-letting will often be found essentially useful in relieving any accompanying idiopathic or common inflammation—though it has no effect, as I have observed of syphilis, cancer, and gout, in subduing the specific disease. Hence, when the lymphatic glands, the joints, or the lungs, are affected with scrofula, the inflammation which accompanies that disease will be mitigated by blood-letting; and hence, too, when such accompanying inflammation is subdued, the progress of the scrofulous disease is checked. But on the other hand, if blood-letting be pushed further than merely subduing inflammation, then, in proportion as the system is debilitated by the bleeding, so will the progress of the specific disease be advanced.

When the lungs become the seat of scrofulous tubercles, there is another source of relief derived from blood-letting, besides that of mitigating accompanying inflammation, and which ought to be kept in mind in the administration of this remedy. In proportion as the circulation in the pulmonary vessels is obstructed by the tubercular masses, so will the heart be liable to congestion; and hence the greater the extent of disease in the lungs, the greater will be the congestion of blood in the heart, and therefore there will be increased frequency of its action in order to remove its

undue quantity of blood. By abstracting blood under such circumstance the congestion is relieved, which quells the increased frequency of the heart and embarrassment in the respiration.

"A female, reduced to a hopeless condition with pulmonary phthisis, complained of a most distressing difficulty in breathing, and the action of the heart was so violently affected, that, although not the most remote hope could be entertained of her living more than a few days, yet in this state she was bled at the arm; and, after a few ounces of blood had been taken away, such was the degree of comfort she experienced, that in a few days afterwards, and almost immediately before she expired, she urgently solicited that blood-letting should be repeated."

DISCOURSE VII.

Curative effects of abstracting Blood in Fevers—In eruptive Fevers—In Scarlet Fever—Small-pox—Erysipelas—In acute Inflammations—In sub-acute Inflammations—In Congestions—In Wounds—In suppurated Parts—In sloughing Ulcers—In Ulcers of the Legs—Some anomalous effects of Blood-letting—Conclusion.

Having, in the foregoing discourses, endeavoured to explain most of the important circumstances connected with the subject of blood-letting—particularly the differences in the effects of abstracting blood from the arterial and venous systems—the differences in the effects of local and general bleeding—the indications for employing each of these modes of abstracting blood—the extent to which blood-letting ought to be carried, and also the injurious effects of abstracting blood,—I propose, before concluding this interesting subject, to make a few observations on the curative effects of blood-letting, and glance over those various classes of diseases to which our attention ought to be particularly directed in the employment of this powerful remedy.

In febrile diseases (the class "pyrexiæ" of Cullen), blood-letting, as a general remedy, must be considered one of the most essential; whether we contemplate its effects in the treatment of "fevers," properly so called—in the "phlegmasiæ," where there is an inflammation of some particular organ—or in the order of "exanthemata, or eruptive fevers."

In the treatment of *fever* there has been much controversy on the propriety of blood-letting; and, like most other discrepancies in medical opinions, I believe these are to be chiefly attributed to the observations of different writers not having been made under the same circumstances, and to there being no class of diseases that assumes a greater variety of type than fevers—not only in different countries and in different classes of the community, but even in different years and seasons in the same place. That fever which, at one period and in one class of persons, is mild, may in a

short time assume the greatest severity—whilst that which at another time appears in a severe and inflammatory form, demanding most energetic depletion, may, at no very distant period, commence with typhoid symptoms, and require a perfectly opposite system of treatment. Hence all histories of febrile diseases, made at different periods and at different places, present an unaccountable variety of character; and, therefore, in the treatment of this class of diseases, all that we ought to attempt is to establish such *general* principles as shall be applicable to the different forms or types in which the fever may present itself; and here, again, we must trust to a judicious discrimination, and an experienced eye, for detecting the peculiarities of each case—as even in the same family, and under similar circumstances, instances will occur of a fever assuming an inflammatory character in one of its members, and in another a typhoid form.

The practice of avoiding the use of all depletive means in the treatment of fevers has been, until late years, very generally followed. Dr. Hamilton first pointed out the essential benefit to be derived from the free use of *purgative* medicines; and our army and navy surgeons had many opportunities, during the last war, of establishing the advantages to be derived from a judicious employment of blood-letting, both general and local, in those fevers which, in different parts of the globe, had usually been considered as requiring an opposite system of treatment.

The objections to the use of blood-letting in fever were founded merely on hypotheses, and on the erroneous notion that such diseases had to run through a certain course—to have a certain duration which could not be shortened—whence it became necessary to husband the resources of the system, in place of abstracting blood, or of adopting any mode of treatment which would cause a further exhaustion of the vital powers.

I had an opportunity of witnessing the fallacy of this doctrine in the case of a youth who was attacked with fever, and whom I accidentally saw just when he was brought from school, at the commencement of the disease.

He complained of a violent headache, had a flushed countenance, a typhoid tongue, a hot and dry skin, and a rapid pulse. I immediately bled him at the arm, when in the supine posture, until he fainted, ordering him a dose of James's powder and calomel every four hours alternately with a purgative. The physician who attended the family was afterwards sent for, and in a few hours he visited the patient. When he heard the history of the case, and observed the character of the tongue, he expressed his decided opinion that the depletive system of treatment would be injurious —that the patient had all the symptoms of typhus fever, which would endure twenty-one days, and that it would be followed by such a train of symptoms of exhaustion and debility, that, in place of blood-letting, the very opposite system of treatment ought to have been pursued. Contrary, however, to this prediction, the bleeding completely and permanently relieved the head; the skin

and alimentary canal were powerfully operated upon by the antimony and calomel, and so early as the ninth day the febrile symptoms abated.

There are many cases of fever in which general blood-letting is quite inadmissible, but wherein the application of a very few *leeches* is of the greatest utility. Such local depletion is advisable in cases of fever whenever there is any fixed local pain or congestion in any particular region—such as that of the head, chest, or abdomen. Whilst the general assemblage of symptoms do not point out the necessity, or, indeed, where they rather indicate the impropriety of *general* blood-letting, the application of a few leeches is generally, under such circumstances, quite sufficient to afford relief; and in adopting this treatment we are strictly imitating the mode which nature herself, in similar cases, adopts: for whilst she endeavours, by acting on the skin and alimentary canal, to relieve the symptoms of the first stage of fever, she subdues congestion or chronic inflammation of particular organs by a "spontaneous hemorrhage."

The abstraction of blood, whether generally or locally, will be found in some cases a powerful remedy in *eruptive fevers;* and, as I have noticed in regard to fevers, it is not many years since blood-letting was first employed in the treatment of exanthematous diseases—from an impression that they also had to "run their course," and that from the great exhaustion created by the disease, all the resources and powers of the system were required to support the patient, in place of rendering any further debility by depletion admissible.

Numerous facts have proved the fallacy, indeed the absurdity, of such a doctrine. There is no febrile disease, even of a specific character, such as small-pox, measles, scarlet fever, or hooping-cough, wherein blood-letting may not be advantageously employed under certain circumstances, particularly during the early stages of these maladies.

When noticing the injurious effects of blood-letting in *specific* diseases, I observed, that in syphilis and gout, besides the specific inflammation which forms the essential character of those complaints, there are often symptoms of another character—symptoms which arise from an *idiopathic* or common inflammation being present at the same time, and which inflammation is to be subdued by blood-letting. Now this observation is applicable to the phenomena observed in the "eruptive fevers," and you will find that these diseases are sometimes accompanied by inflammatory symptoms, or with an idiopathic inflammation in a particular organ, which requires a separate system of treatment.

Blood-letting may also be resorted to in the early stages of *scarlet fever*, particularly when there is a determination of blood to any particular part, as the chest or head. Sometimes the inflammation of the throat, the characteristic feature in this disease, is so severe, that much relief is obtained by local bleeding, more or less

profuse; but when any of the vital organs are affected, then venesection is preferable.

There is in this disease, as in erysipelas and other of the exanthemata, a notion with many that patients cannot endure a depletive system, or that such is unnecessary for their treatment. It cannot be denied that, like most other diseases, the scarlet fever in many cases passes through a very mild course, having scarcely a symptom requiring any particular treatment; and there are other examples wherein the pulse, from the very commencement of the disease, is feeble, and the powers of life sink rapidly. We ought also to be aware, that cases of scarlatina do occur, where severe inflammatory symptoms come on, and of that degree wherein blood-letting is highly to be recommended. The additional vigour which the pulse acquires whilst the blood flows from the vein, will be an unerring guide for estimating the propriety of the measure, and the extent to which it should be carried.

A gentleman between fifty and sixty years of age was seized with shivering, succeeded by hot skin and other febrile symptoms. On the evening of the same day I visited him. His mind was restless and a good deal excited; his skin hot and burning, his tongue white and loaded, the pulse frequent, and he had a tumultuous action of the heart. His countenance was flushed, the tint of which, along with a slight redness of his throat, made me suspicious that he had an attack of scarlet fever. He was immediately bled from the arm; at first the pulse rose, and a considerable quantity of blood was abstracted before he became faint. Calomel, combined with antimony, and a purgative medicine, were then given alternately every two hours. Next morning the febrile symptoms were much subdued, but his throat had become very painful. Twenty-four leeches were now applied to the external fauces, with relief. In a few hours afterwards he was again bled at the arm, a slight return of headache, with fever, having come on. These symptoms never returned; a fetid slough separated from the tonsils, and he afterwards recovered daily, and was very rapidly restored to health.

From the treatment which was adopted in this case, and its decided success, doubts were entertained of its having been really a case of scarlet fever; but those doubts vanished when that disease made its appearance a few days afterwards in two children of his family.

The benefit of blood-letting, when the febrile symptoms accompanying *small-pox* are severe, or when inflammation affects any particular organ, is equally great. An intelligent army-surgeon made it a general rule, from which he experienced the greatest benefit, always to bleed soldiers on the commencement of the fever preceding the eruption.

A lady was attacked with severe febrile symptoms, for which she was profusely bled, and with great relief. On the following morning it appeared that she was afflicted with small-pox, and her medical attendant at first expressed his regret at having had

recourse to venesection. Such, however, was the mild progress of the disease, when viewed in comparison with that of many who were affected in the same town, that all were convinced the blood-letting had been highly beneficial, and had mitigated the febrile symptoms.

When considering the effects of local bleeding, I remarked that its benefits were exemplified very strikingly in cases of *erysipelas*, from the relief derived by the profuse hemorrhage which followed incisions made into the inflamed integuments. Such a practice will, however, I am persuaded, be seldom found necessary, if blood-letting be had recourse to in the early stage of that disease.

From a supposed *typhoid* character of erysipelas, it was, and with some still is, the general practice never to deplete or pursue an antiphlogistic plan of treatment; and I well remember visiting a lady who was suffering from a very severe attack of erysipelas in the face, and finding at her bed-side a large tumbler of wine and water, and that she was taking as much bark as her stomach could receive. By bleeding her freely at the arm, repeating the operation three times successively at short intervals, along with purging and antimonial medicines, she rapidly recovered; and another medical attendant expressed his surprise at the treatment I had employed, remarking that during a long attendance at a public hospital, he had never known blood-letting employed in erysipelas—adding, that nearly all the cases which he had seen of that disease affecting the face and head had terminated fatally.

In erysipelas there is usually a peculiar feeling in the pulse, which is apt to dissuade the practitioner from the employment of blood-letting. The pulse, though small, will however be found more or less *incompressible*, and whilst blood is flowing from a vein it acquires more and more volume, and often a very considerable quantity is abstracted before a fainting state supervenes.

Whenever the abstraction of blood is necessary in the treatment of erysipelas, *general* is to be preferred to *local* blood-letting, and chiefly for this reason—that the leech-bites often act, in such states of the system, as additional exciting causes, and therefore the local irritation created by them ought to be avoided, which can be done by adopting venesection. Besides, we seldom see erysipelas so severe as to require blood-letting without there being more or less disturbance of the whole system, and this is a further reason for preferring general to local depletion in the treatment of this disease.

In the treatment of all *inflammations* (the "phlegmasiæ" of Cullen) the abstraction of blood is a most powerful curative means, and, as I have already noticed when considering the subject of general blood-letting, whenever an organ is inflamed, and that inflammation is accompanied by febrile excitement, the abstraction of blood should be unhesitatingly employed. Under such circumstances, the blood should be abstracted from the arm whilst the patient is in the recumbent position, until syncope be produced, and the operation should be repeated whenever the pulse rises, and until the febrile symptoms are subdued.

Even after the feverish symptoms have been mitigated, there may still exist some determination to a particular organ, such as the head, chest, or abdomen, in which case local bleeding should be resorted to. By general blood-letting the increased action of the whole vascular system is diminished, but local bleedings are subsequently necessary to check the undue action of the capillaries of the inflamed part. It is always of importance, however, in the treatment of inflammation, that the general should precede the local bleeding. Every day we meet with cases wherein local bleeding has been employed without benefit, and in which, when general bleeding is afterwards adopted, the symptoms at once subside.

"A young officer suffered severely from pain in the head, along with ophthalmia and general fever. He was repeatedly bled by leeches, and the temporal artery was opened without affording him any relief. A vein in the arm was now opened, the effect of which was to produce not only an immediate removal of the uneasy feelings in the head, but to check the future progress of all inflammatory symptoms."

There are many sub-acute inflammatory affections which will be found to yield to a similar system of treatment. Indeed, there appears to be produced by small and frequent bleedings, in such cases, an effect very different to that arising from larger depletions; and in adopting the practice there is little difficulty in regulating either the number of leeches necessary to be applied, or the frequency of their application. At first the bites may bleed very profusely, whilst their future applications will yield comparatively little blood, but their use should be repeated as long as the blood they draw affords decided relief.

I need scarcely remark, that whilst this system of local bleeding is pursued, it is not meant that the use of other auxiliary remedies should be precluded. On the contrary, it is always to be remembered that blood-letting is here supposed to be employed in conjunction with other curative means, that state of the system requiring the abstraction of blood being always accompanied by more or less disturbance of some of the other functions.

When inflammation assumes a chronic, or passive, or *sub-acute* form, the abstraction of blood is a remedy as useful as when the disease is in its acute stage. The above terms have each been employed to denote the state of an inflamed part wherein there is no longer any febrile excitement—no disturbance in the action of the heart, but where there is a change merely in the functions of the capillary system of a particular organ; and hence, as I have already remarked, it is in this stage of inflammation that local is usually preferable to general blood-letting.

In all such cases I have been in the habit of recommending the frequent repetition of *small* bleedings in place of one or more large depletions, and I have often been both surprised and gratified with the benefit of this practice. A person afflicted with some chronic inflammation, and whose strength cannot support any thing like a

sudden depletive system, will often gain vigour and health by the daily use of two or three leeches in the vicinity of a diseased part.

A young lady, of feeble constitution, had one of the glands in the neck rapidly enlarged. It was tender to the touch, but she had no febrile symptoms. I advised her to apply leeches daily, beginning with four, and diminishing the number as the swelling abated. This treatment, along with fomentations and poultices, greatly relieved her, and the swelling gradually diminished. But the leeches were employed no less than seventeen times before all tenderness went off; and what surprised her relatives was, that at the termination of this treatment her general health and strength had improved, and she had regained flesh.

A girl, about six years of age, had a scrofulous affection of the second joint of the thumb, a considerable enlargement of the soft parts having taken place, with slight discolouration and tenderness. Two leeches were daily applied for one week—one each day—during the subsequent week, and one every second or third day afterwards, until the swelling completely vanished; after which treatment her general health was greatly improved.

This mode of treating sub-acute or chronic inflammation is applicable to all organs; and though in general medical men are aware of its importance in inflammatory diseases of the vital organs, there are many similar affections of parts less important in the animal economy to which a depletive system of treatment, though not generally employed, will be found equally beneficial.

Ophthalmia, also, presents itself in numerous forms wherein this system of small but frequently repeated local depletions are very beneficial; and I might quote numerous cases to show how inflammations of the eye, that have existed long, and for which a variety of local as well as general remedies had been employed without success, were afterwards completely subdued by omitting all local applications, and merely applying daily one or two leeches behind the ears alternately, as long as the symptoms continued to yield to the treatment.

A girl six years of age had the cornea of both eyes so dim that vision was nearly destroyed, and there was a pale redness of the whole sclerotica, accompanied by an intolerance of light. She was sallow, feeble, and emaciated, the circulation hurried, and the digestive organs considerably disordered. I recommended two leeches to be applied behind one ear every day—one grain of calomel to be given every morning, and, after a week, every second morning for a few times. Some of the liquor of potass combined with rhubarb was given twice a day. Such was the manifest benefit derived from the leeches in this patient, that they were daily continued for two months, and afterwards one was applied daily for another month. The result of this treatment was, that a perceptible amendment continued to take place daily in her condition. The redness of the eyes gradually subsided, the corneæ regained their transparence, the digestive organs improved, and she accumulated health and strength, so that at the end of the

third month she required no further treatment, and no local remedy was ever applied to the eyes.

The patient was brought to me upwards of a year after this illness with a very extensive inflammatory swelling of the soft parts covering one of the tibiæ. I pursued the same system of treatment, and it was not until several weeks had elapsed, and that besides the use of calomel she had applied leeches daily, that the swelling was subdued.

There are many other organs, particularly the mamma and genito-urinary organs of both sexes, liable to chronic inflammations, which may be subdued by this system of small but frequent local depletions.

The observations I have hitherto made on the curative effects of blood-letting apply chiefly to the employment of it in the treatment of diseases of an inflammatory character. But there is another class of cases wherein the abstraction of blood is an equally powerful remedy, and in which the propriety and extent of the depletion are indicated by a different assemblage of symptoms. I allude to *congestion*, or plethora, of a particular organ or region of the body.

This state of congestion, as I have already endeavoured to point out, is very different from inflammation; in congestion the vascular system, more particularly the veins of the affected part, being preternaturally distended with blood, whilst in an organ which is inflamed there is a change in the condition of the arterial capillaries. A mere congestion of blood can be artificially produced in the arm by tying a ligature around it, and thus distending the veins. There is no alteration in structure thus produced, but merely an increase in the quantity of blood, which, if we could suppose the limb was removed from the body and immersed in water, would be washed away. Congestion, I have also observed, ought to be discriminated from an irregular distribution of blood, examples of which we have in flushings of the cheek—the effects of friction on the skin—the presence of a mote in the eye—and in many of those headaches which are usually called "nervous." Now, in cases of congestion, bleeding should not be generally carried to the same extent as in inflammations, and the blood is to be removed either from the vessels immediately connected with the diseased organ, or remote from it. Leeches on the frontal vessels, or on the ethmoidal vessels ramified on the septum of the nose, or applied behind the ears—for the reasons already explained—or cupping the nape of the neck, are the modes best adapted for relieving congestion within the head.

Leeches or cupping may, in like manner, be employed on the parietes of the thorax and abdomen, in congestion of the viscera; and leeches on the verge of the anus are particularly beneficial in abdominal congestions, from the circumstance formerly stated of the connection between the hemorrhoidal veins and the portal system.

Whatever theory or explanation may be given, I have already

observed, there cannot be a doubt of the fact that many diseases of the thoracic, chylopoietic, and uterine systems, are essentially relieved by the application of leeches to the feet; and this practice of removing blood from a distant part is equally remarkable in disorders of the head—these being often relieved by the escape of even a few drops of blood from the hemorrhoidal vessels.

But there are cases of congestion in which blood-letting must be carried to a great extent, more particularly where the brain or chest is the seat of the disease—life then being often in more or less danger, and the only mode of preserving it being the abstraction of such a quantity of blood as to produce syncope.

A gentleman, about sixty years of age, and of a sanguineous temperament, was suddenly seized with giddiness, at which he was alarmed, and I visited him immediately. There was so little deviation from the natural state of his pulse, that I even hesitated whether to take some blood by venesection or by cupping. The former mode being determined on, he was placed in a reclining posture on a sofa, a wash-hand basin put underneath his arm, into which the blood flowed freely; his pulse soon began to rise, and an incompressible feeling remained in it until a large quantity of blood was abstracted; at last it began to sink, but not until such a quantity of blood had escaped as I would not have ventured to take away, had not the character of the pulse and the plethoric appearance of the patient given me confidence. Except purgatives given sufficiently freely to open the bowels, he took no other medicines. On the following day he felt so little the effect of the depletion that he dined at a club, and on the following evening he was so well as to be able to attend his duty in the house of commons. The blood he lost was accurately weighed, and amounted to no less than fifty-two ounces—a quantity many practitioners may have removed in cases of great urgency; yet, what was remarkable in this case was, that none of those debilitating effects were produced which might reasonably have been anticipated from so large a depletion; and, what was most satisfactory, this patient continued several years after in most perfect health.

I have already remarked, when speaking of the *injurious* effects of blood-letting in paralytic affections arising from effusion of blood in the brain, that blood-letting cannot be carried far in proportion to the severity of the symptoms; for, on the contrary, in proportion as the shock is severe, a lesser quantity of blood only can be removed with safety. That is, a person who has an attack of palsy, destroying at once the power of the upper and lower extremities of one side, and also that of speech, cannot spare so much blood as the same person could have done, and ought to have lost, *previous* to the attack, had its approach been observed.

In proportion to the severity of the injury sustained by the brain, so does the system suffer from the shock; and hence, in the degree in which the powers of life are diminished, so will the system be the less able to support the abstraction of a large quantity of blood.

A man, forty-five years of age, whose habits were extremely

dissipated, and who drank frequently to intoxication, lost suddenly the power of speech, and the whole of his left side became motionless. In this state I opened a vein in his arm, and after a very few ounces of blood escaped his pulse sank; and on repeating the operation a few hours afterwards, his pulse again faded after a very small quantity was removed. Having freely evacuated the bowels, and taking calomel every few hours, the mercury at last affected his gums, and a sharp ptyalism supervened, which was followed by a gradual restoration of the powers of speech, as well as of the use of the paralysed extremities. A seton was afterwards introduced into the nape of the neck; and I saw this patient upwards of four years after this attack, having recovered his speech and that of the use of his side so perfectly as to enable him to be employed in his business as a watch-maker.

When, on the other hand, the approach of a paralytic attack is foreseen, or even after the symptoms have slightly commenced, it is astonishing to what an extent blood-letting must sometimes be carried, in order to check the progress of the malady.

A patient called on me, complaining of a numbness in the muscles of the right arm, and a tingling sensation in the fingers, which symptoms he had first perceived on shaving himself that morning. His pulse did not appear much changed, but it was not easily compressed. The action of the heart was unnaturally vigorous; his countenance had a tumid appearance and a leaden colour, but he had no uneasy feelings in his head, though he had walked a considerable distance to my house. I advised him to return home in a coach, and to be immediately bled in the horizontal posture. Forty-four ounces of blood were abstracted before syncope came on. The pulse soon began to rise, and he was largely bled a second time twelve hours after the first bleeding, and the blood was again allowed to flow until he fainted. In forty-eight hours after the first bleeding the action of the heart and arteries had greatly increased, accompanied with feelings of stupor and giddiness, notwithstanding his bowels had been very freely evacuated; he was therefore again bled at the arm till syncope came on—having lost in the three bleedings no less than a hundred and six ounces of blood! A few doses of calomel, which had been given along with strong purgatives, in a few days affected his gums, and created a good deal of mercurial fever; but, after this went off, his strength rapidly recovered, and in a few weeks all numbness left his arm—its motions being at the same time so completely restored that he could use a pen as well as previous to his illness.

Blood-letting may often be most successfully employed in restoring the *menstrual flux*, when that periodical discharge has been suppressed. For this purpose the bleeding should be employed the day previous to its approach—the abstraction of a small quantity of blood at that period relieving the system of more or less disturbance, and thus permitting the natural functions to be more perfectly performed. In such cases the application of leeches to the feet is the best mode of abstracting the blood.

Blood-letting is also not less useful in regulating the quantity and quality of the menstrual flux, and in alleviating the pain and distressing symptoms which often accompany a diminished menstruation.

"An unmarried lady, about twenty-two years of age, had for several years suffered from painful menstruation. I advised her to apply from two to four leeches every night for three nights previous to the accession of the menstrual discharge, and to use at the same time the pediluvium. This plan of treatment had the effect of diminishing the pain accompanying each succeeding period; and after the fourth month the menstrual flux took place without pain, since which time the period has been quite natural and free from pain, and her general health so much improved that she has since enjoyed better health than she had previously for several years."

The abstraction of a quantity of blood ought to be had recourse to, before and after most surgical operations. When operations prove unsuccessful, I have always remarked that, in by far the majority of cases, the patients die of inflammation of some internal organ. Bleeding therefore will, when early resorted to and carried to a proper extent, have the effect of always checking any inflammatory disposition, and it will also be the means of securing the healing of the wound by adhesion, when such is desirable.

The modes of abstracting blood for such purposes consist, either in taking away a quantity before the operation—in allowing the divided vessels to bleed during the operation—or in employing venesection after the operation. Now all these *three* methods ought to be adopted separately or conjointly in particular cases.

When an operation is to be performed on a plethoric subject, and an operation where little blood can be lost—more particularly in operations for *cataract*, in which no blood-vessel is ever divided—then it is very judicious to bleed the patient on the morning of the operation; any future bleeding, of course, depending on the subsequent symptoms.

When there is any chance of dividing, during an operation, blood-vessels of such a size as to admit of the wished-for quantity of blood to flow from the wound, then I have usually been in the habit of *not* bleeding the patient previous to the operation, but of allowing such a quantity to escape from the divided vessels as appeared expedient.

Advantages are in most cases derived from a plentiful sanguineous depletion during operations; a complete check being thus offered to the accession of the febrile symptoms, and to the danger of inflammation in the wounded parts. Strongly am I impressed with the utility of this practice, from having generally remarked that all those patients who have lost much blood during operations from the wound, seldom require any subsequent bleeding, and the wounds usually heal by adhesion.

When, under any circumstances—whether the patient have lost blood previous to or during an operation—febrile symptoms do

supervene, attended by more or less *local* pain, then blood should be freely abstracted, and be repeated until such symptoms are completely subdued.

If a wound be not forcibly closed and tightly bandaged, and vessels of any considerable size have not been tied with ligatures, then, whenever the slightest inflammatory disposition supervenes, a hemorrhagic effort takes place, and there ensues a bleeding from the wound, which never fails to relieve the inflammatory state of the parts. From observing this phenomenon, I was led not to dress wounds and close them up in the usual manner; and, whenever any bleeding from them did take place, never to use any local means to suppress it, but to leave the vessels as it were unmolested, to pour out such a quantity of blood as may be requisite to relieve the inflammatory state of the wounded parts. This system of management generally secures the closure of the greater portion of a wound by adhesion, when its edges are in contact, and when the wound is not of such a nature as to render it impossible. As I have already remarked, it so moderates the subsequent local inflammation, that the suppurative process is always diminished both in severity and in extent. The same general remarks apply to wounds accidentally inflicted, and to all kinds of injuries. Some observations on these points I have in part anticipated.

It is usually considered that when an inflamed part has advanced to suppuration, the future treatment ought to be altogether directed to the healing of the abscess, for which poultices and free incisions are frequently employed.

It is true that usually, when the contents of an abscess are discharged, the accompanying pain as well as inflammation abates, but this is not the case on all occasions; and it is in such cases, and under such circumstances, that I have found local blood-letting essentially useful.

In most cases of cellular as well as glandular inflammation, the purulent fluid which is collected, and forms the abscess, does not make its escape if left to nature until all the circumjacent swelling and inflammation have abated. But if the matter has been artificially evacuated, and the surrounding swelling and inflammation are unsubdued, then the daily application of leeches to the inflamed integuments will be found most useful; and whilst the inflammatory symptoms are thus subdued, the suppurative process will be observed in like proportions to diminish.

A youth, when bathing, trod upon a broken bottle, which cut the sole of the foot deeply. I saw him about four months after the accident. There were considerable tumefaction and tenderness of the soft parts around the wound; almost the whole extent of the cut remained open, and there was a copious puriform discharge, which appeared to ooze from a cavity corresponding in extent with the hardened and swollen soft parts. Four leeches were daily applied, and, with a common poultice and perfect rest, in eight days the wound was closed; the repetition of the leech a few

times, at more distant intervals, completely removed all swelling and tenderness.

When a succession of abscesses has formed in any part, and when sinuses have been extending, as it were, step by step, the inflammation of the surrounding soft parts can in such cases be completely checked by local bleeding; and in this manner have I often been able, by the almost daily application of leeches, completely to conquer the inflammation, and thus check the formation of new abscesses and the extension of sinuses. I have long thought that it is by the bleeding from the incision made for laying open sinuses that the good effects of that practice are chiefly derived.

It is surprising to what an extent bleeding can be employed, or rather how often a small number of leeches can in such patients be applied with the most decided benefit; and in place of patients being reduced by such a practice, the effect of the depletion, by alleviating disease, seldom fails to improve the general health.

The inflammation which is caused by a *burn* or scald, may be alleviated by the same plan of treatment as is so successfully resorted to for the relief of inflammation caused by any other injury.

Whilst a youth about ten years of age was amusing himself with gunpowder, a large quantity ignited and severely scorched his face. When I saw him a few hours after the accident, I found the whole face much swelled and scorched, and the eyes closed from the swollen state of the palpebræ; he had great pain, and the pulse though not frequent was firm and unyielding. He was immediately bled at the arm until he became faint, which had the effect of alleviating the pain and diminishing the swelling. Leeches were applied behind each ear alternately whenever pain returned, and these were repeated morning and evening until the inflammation of the integuments was completely subdued—and whilst this treatment was employed the bowels were at the same time fully evacuated, the patient kept on the antiphlogistic regimen, and the common liniment of lime-water and linseed-oil applied to the burn.

Whenever an ulcer, whether it be the consequence of a wound, or be caused by some specific virus, such as that of syphilis, assumes a disposition to slough, it has been usual to employ stimulants, both as internal and as external remedies. Now there are many cases of this description wherein an opposite or depletive system of treatment may be advantageously employed. I first observed the extraordinary effect of depletion in a case of sloughing chancre, from which a profuse hemorrhage took place.

Early one morning I was sent for to visit a gentleman who had lost a great quantity of blood during the night from a sloughing chancre, which had extended into one of the corpora cavernosa. To arrest this hemorrhage I immedialely bled him at the arm till he fainted; after which the hemorrhage from the sore did not return, but a change took place in its character, which I little

anticipated. The sloughing process was completely checked, the slough separated, and the wound glanulated and cicatrised in the most healthy manner.

Reflecting on the effect of depletion in such cases, we find incontrovertible proof that sloughing sores are at least not always to be attributed to a diminished vigour or typhoid state of the system, nor to an increased virulence of the specific virus, but to an excess of inflammation arising from the peculiar state of the system or constitution of the patient. This inflammatory state is to be subdued by an antiphlogistic system of treatment, independent of any subsequent treatment which may be necessary for the cure of the specific disease. Hence, as is well known, in cases where the syphilitic sore shows a disposition to inflame much, or to slough, the exhibition of mercury is prejudicial, and never ought to be administered until all local as well as constitutional excitement be subdued. In the class of cases to which I allude, besides blood-letting, opium ought to be freely given, and one or more grains may be taken every few hours, until the symptoms be relieved.

The same observations, which I have now made on the curative effects of blood-letting in sloughing sores, apply to those wounds where it is not unusual to see the soft parts slough or mortify from the violence of the inflammation consequent on the injury. In such cases there is a period when the best effects will result from local or general blood-letting, and that too where from the sloughing appearance of the wound depletion is not commonly employed.

This useful effect of abstracting blood has been established in the most satisfactory manner in the treatment of *hospital gangrene* by Dr. Boggie, an intelligent army surgeon, who, in the military hospitals during the Spanish campaigns, met with many examples of that formidable disease for which he found venesection the most powerful remedy.

A lady about seventy years of age and of a corpulent form, received a sharp blow on the end of the tibia. Ten days after the injury, when I was consulted, a portion of the integuments which had been bruised had become of a dark livid colour, and an erysipelatous inflammation had extended over a considerable portion of the adjacent skin. She was restless, the skin hot, the tongue white and loaded, and her pulse small, contracted, and frequent; with a view to arrest the gangrenous character of the integuments, she had been ordered wine-bark and a generous diet. I advised her to be bled at the arm, and she lost about eighteen ounces of blood when in the horizontal posture, before she became faint. The bowels were freely opened, a strict antiphlogistic treatment was pursued, and on the following day the inflammatory symptoms of the injured integuments were greatly subdued. One grain of calomel and antimonial powder was given every few hours until the febrile symptoms subsided, and leeches were daily applied to the limb, on the parts adjacent to those which were inflamed, until the

discolouration and redness disappeared, and in a few days she got quite well.

This plan of treatment is equally applicable to the inflamed integuments around an ulcer. I am constantly in the habit of applying repeatedly a small number of leeches, and with the best effects, in the immediate vicinity of ulcerated surfaces, and where general bleeding is not indicated.

I may, however, here mention, that there are many ulcers of the lower limb, which, though not accompanied by those febrile symptoms which point out the propriety of general blood-letting, are manifestly benefited by the abstraction of a moderate quantity of blood by venesection. I was first led to adopt this practice by having remarked a decided relief in some ulcers from the rupture of a varicose vein accompanying them, and from the benefit derived by bleeding animals afflicted with any ulceration, or "humour," as it is commonly designated; and also, from such ulcers being usually the effect of some constitutional disturbances, which would have been relieved by venesection.

By adopting the practice of bleeding patients with ulcerated legs, whenever they were admitted into the hospital, and pursuing an antiphlogistic regimen, with no other local treatment than a cold-water poultice, and the horizontal posture, I have been much surprised at the rapidity of their amendment; especially when compared with that resulting from the tedious and troublesome application of plasters and bandages.

A young man had the posterior part of the skin around the leg at the bend of the foot discoloured, many parts of it were excoriated, and the veins were very turgid. This commenced three years ago in a small spot which gradually increased and became the source of great irritation and itching. Four leeches were applied to the skin contiguous to the diseased part, and he took calomel and colocynth morning and evening; the redness and irritation was much relieved the following day. Leeches were again applied, and on the fourth day the inflammation was much subdued—itching gone—excoriations dried up—and the skin desquamating—some uneasy feelings, also, particularly a dulness and muddiness within the head, accompanied with restlessness, were relieved.

Hitherto great attention has been directed to the useful and curative effects of blood-letting, but it is natural that we should enquire what are the consequences when such bleeding is not resorted to under all the various circumstances which I have pointed out as indicating the propriety of such treatment. We daily meet with opportunities of noticing the changes of structure which take place in every organ of the body, in consequence of inflammations being allowed to advance—inflammations which, had they been early detected and treated by depletion, might have, in all probability, been subdued, whilst any permanent change of structure of the inflamed part would have been completely arrested.

There are, no doubt, many examples of inflammatory diseases,

which have been relieved without blood-letting, some of them, when left to nature, running through a particular course, and leaving the affected organ unchanged; and there are others which are checked by the exhibition of those internal and other remedies which influence and subdue the action of the arterial system. But there are many affections where the propriety of blood-letting has been indicated, though not adopted; and where, in consequence, has been laid the foundation of some substantial structural disease. I am indeed convinced, that in almost all those diseases which are, at their commencement, attended by a disturbed action of the vascular system, a much more rapid and efficient abatement of the symptoms would result from venesection, pursued even to a very moderate extent, and the whole system would suffer a much less subsequent debility, than by a free use of purgatives and diaphoretics, and a long continued perseverance in such antiphlogistic treatment.

There is a curious effect of bleeding which was remarked to me, by Professor Russell, of Edinburgh, and occurred in the following instance.

A lady of a plethoric habit was very liable to sudden and severe congestions of blood in different parts of the body, most frequently in the lungs; to relieve which the abstraction of a quantity of blood was indispensable. The moment a vein was opened she not only began to experience relief, but felt an instantaneous exhilaration of spirits, like one intoxicated. Mr. Russell repeatedly witnessed this very singular effect in this patient, and a medical friend of his observed a result somewhat similar in another person.

Bleeding, too, not only increases the action of the bowels, but it promotes the mercurial action. Dr. Fordyce used to say that in some cases of constipated bowels, we ought to open them with a lancet; and the late Mr. Gibson of Manchester was in the habit of bleeding largely when he was anxious to influence the system rapidly with mercury, and I have repeatedly observed how quickly affected was the system of those who at the same time were bled.

It is not an unusual, though it is a very erroneous, notion, that if a person repeatedly loses blood, it becomes *a habit*, and he requires ever afterwards to be occasionally bled. But surely if a patient be affected with an inflammatory disease, his sufferings should be alleviated by blood-letting, when it is perhaps the only certain remedy.

With some people it is a practice to lose blood *periodically*, generally in the spring and autumn, and here, indeed, it is by no means improbable, that if these periodical bleedings were in such persons neglected, some injurious consequences might follow.

In concluding these observations on the subject of blood-letting, I have endeavoured not to omit the consideration of any very important point, whilst I have avoided entering on speculative discussions. The materials of these discourses I have been em-

ployed in collecting and revising many years, and during that time have embraced every opportunity of applying to the doctrines here inculcated the test of experience—of communicating them to professional men—and of comparing my opinion with those founded on the experience of others. Almost every observation which has been here made on the curative effect of blood-letting, and the rules given for employing it, accord, I am convinced, with the results of the generality of practical men. In this, however, I must be understood as alluding to those only who themselves have been in the habit of performing the operations necessary for abstracting blood—for I contend that it is perfectly impossible for such persons as do not use their own judgment in regulating the extent of the bleeding by the effects produced whilst the blood is flowing from the vein—it is impossible for them to form correct and just notions on the use of blood-letting, and he who is in the habit of *prescribing* the abstraction of particular quantities of blood, in like manner as he may be accustomed to write the prescription for a dose of medicine, must possess a very incompetent knowledge of all the advantages which are to be derived from the judicious employment of this most useful and no less powerful remedy.

THE END.

COUNTER-IRRITATION.

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COUNTER-IRRITATION,

ITS

PRINCIPLES AND PRACTICE,

ILLUSTRATED BY

One Hundred Cases

OF THE MOST

PAINFUL AND IMPORTANT DISEASES EFFECTUALLY CURED BY EXTERNAL APPLICATIONS.

B 38

BY

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PREFACE.

The present volume contains the result of nine years' experience and meditation on the subject of Counter-irritation; together with a selection of cases to illustrate its principles and practice, as sources of incalculable benefit to patients in the treatment of disease. I address it in a special manner to the general reader, rather than to my professional brethren; because any effort which the medical profession might feel disposed to make, in furtherance of the views detailed in the following pages, would prove abortive, unless the public generally were previously made familiar with the subject, and prepared to understand its true importance, by intelligible as well as indisputable evidence. Of that importance the medical profession are fully aware: they have therefore little or nothing to learn from me on that point. But the public at large being imperfectly acquainted with the question itself, and its principal bearings, require, as a matter of course, to be informed on every subject connected with it.

This then is the task which I have undertaken to perform; and I have done so from a persuasion that few, if any, of my medical brethren have, in the course of the last nine years, had opportunities equally numerous with myself, of trying the merits and value of the doctrine and practice of Counter-irritation.

I have studied to perform my task in a popular, rather than in a learned and professional manner; and accordingly the language I

have adopted, free from technicalities and scholastic definitions, will, I trust, render the subject-matter familiar to the most ordinary understanding. In this way Counter-irritation, as a means of treating diseases without the aid of medicine, or as a powerful auxiliary to it, may stand a fair chance of being properly appreciated. In this way too it will become easy for the medical profession to adopt, more generally than they have hitherto been able to do, the doctrine of Counter-irritation, and extend its application into a wider field of practice.

In addressing myself to the general reader on this important topic, rather than to the faculty, I by no means wish it to be inferred that I can render the former independent of the latter, by explaining all the mysteries of a doctrine which, if properly worked out, will considerably reduce the present enormous consumption of drugs in the treatment of disease. On the contrary,—my object is to make the public feel that it will be to their interest hereafter (seeing the mass of stringent evidence contained in the present volume, purposely written for them) to encourage their medical attendant to act, on all necessary occasions, upon the principles of Counter-irritation, instead of prescribing endless pharmaceutical compositions; and above all, to prevail on him to have recourse to those more potent and successful counter-irritants, the value and nature of which it is the object of the present volume to describe.

So long ago as the year 1832, I promised, in another work of mine, to publish the result of my experience respecting the particular class of counter-irritants to which I have just alluded, and the first idea of which had occurred to me three years before. Considering, however, the very extraordinary influence which those counter-irritants seemed to exercise over many important diseases —an influence which was above that of all other counter-irritants usually employed by the profession; and feeling satisfied in my own mind that the effects, equally rapidly and beneficial, produced by those counter-irritants, in order to be credited by the public, must rest on a more widely-extended experience than I then possessed,—I determined on waiting some years longer, ere I fulfilled

my promise; in the hope of being able to accumulate a large body of evidence in favour of a mode of treating diseases hitherto so much neglected.

In sending, therefore, the present volume to the press, I fulfil, as it were, a species of tacit engagement made with the public many years since; while, at the same time, I adduce the strongest possible testimony in support of an assertion I have often put forward, that, "It is not impossible, without the aid of internal medicine, and without having recourse to poisonous ingredients as counter-irritants, instantly to suspend, and in the majority of cases permanently to remove, by means of certain external remedies, every degree of pain, however acute, which shall depend on morbid affections of the nervous and muscular systems, or of the circulation."

This is my doctrine, and every one of the following pages teems with proofs of its correctness.

A. B. GRANVILLE, M. D.

16, Grafton Street, Berkeley Square,
July, 1838.

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PART FIRST.

POPULAR OBSERVATIONS ON COUNTER-IRRITATION.

SECTION I.

WHAT IS MEANT BY THE TERMS COUNTER-IRRITATION, REVULSION, AND DERIVATION.

Modern adoption of the term Counter-irritation—Substituted for that of Revulsion—Its origin and supposed meaning—The two terms not identical—Revulsion begins when Counter-irritation ends—Neither term sufficient to denote a transference of fluids—The term Derivation adopted for that purpose—Critical analysis of the three terms—Proofs—The terms indicate a certain mode of treatment but not of action—English and French notions differ—External applications proposed by the author—Their effect instantaneous in nervous attacks—Their agency in those cases not explicable by any of the three usual terms—In ordinary cases they will produce the effects implied by those terms.

1. The term COUNTER-IRRITATION, now very generally used in ordinary language, as referable to the treatment of disease, is of a comparatively recent adoption, and succeeded to the more expressive, though antiquated word, "Revulsion."

2. The history of the origin of the term itself contains the most comprehensive explanation of its etymology. When certain disorders, according to the views of some prevailing system of medicine, are supposed to depend on *irritation*—meaning that peculiar action which certain physical agents are known to exert on particular organs, and which consists in *irritating* those organs;—and when it is found that the excitement of a somewhat similar *irritating* action, on another part of the body, by artificial means, cures the original disease dependent on *irritation;*—the action by which the disorder is removed receives the name of COUNTER-IRRITATION.

3. This origin of the word, it is contended, fully explains its meaning. A familiar example will make the thing still clearer. When a degree of internal pain exists in some part of the chest, denoting a low grade of inflammation, it is considered that the part is in a state of irritation. A common blister being applied externally to the pained part, relief is soon obtained, and at last a com-

plete removal of the pain is the result. The blister, at the same time, has produced considerable irritation, and its concomitant, pain on the part to which it was applied. It is therefore fair to conclude, that it is through that very artificial *irritation* that the original irritation or disease was removed; and hence such a sanative agency has been deemed entitled to the distinguishing appellative of Counter-irritation.

4. It is not necessary that the artificial irritation which is set up to produce the cure of an originally morbid irritation, should take place upon or very near the part suffering under disease. On the contrary, it is frequently a preferable and a necessary plan, to excite counter-irritation at a considerable distance from the original seat of the disorder. In this view most of the older practitioners coincided; and as the distance between the natural and the artificial seat of irritation was often very great, those practitioners, who looked to the fluids of the body for an explanation of every morbid symptom, were persuaded that the beneficial effect of the artificial irritation depended on a diversion produced by it in the current of the diseased humours which were running to the suffering part; in other words, that the artificial irritation drew to the spot, where it was artificially excited, the current in question, and thus relieved the part suffering from disease.

5. In accordance with this mode of viewing so curious and important a phenomenon, the significant term of "Revulsion" was adopted to explain it, or rather to denote it. Thus, in that quaint writer, Temple, as quoted by Johnson, we read the following passage, which may serve as an example to illustrate our position: "I had heard of some strange cures of frenzies" (irritation of the brain) "by casual application of fire to the lower parts" (counter-irritation), "which seems reasonable enough, by the violent *revulsion* it may make of humours from the head." Upon which the great Lexicographer offers the following explanation of the word "Revulsion" in his "Dictionary:" "The act of revelling or drawing humours from a remote part of the body."

6. In this limited sense, the term Revulsion would only explain and account for the recovery of such disorders in which there is really a something to "draw out" (*revellere*); and therefore would, if applicable at all, have but a limited application. Another term, therefore, was added to medical language, to denote those cases in which humours were not drawn out, but only made to change position,—as in the case of *dry cupping*, where a force is employed to direct a certain portion of fluids from a part of the body which they seem to overpower with their presence, to that point of the surface of the body to which the instrument is applied. The term I allude to, is "Derivation."

7. Were it the province of a medical practitioner to act the part of a critic, it would be an easy task to show that not one of the three denominations now considered is strictly correct, either when employed singly, to denote action according to the meaning of

each peculiar term, or when used to explain, in a general manner, the action which has been especially assigned to each (2, 4, 6). For, in the first place, it is not always clear that an *original* irritation, as productive of disease, existed in the body, when *artificial* irritation (Counter-irritation) was excited to cure that disease;—neither is it evident, in the second place, that there is aught to "draw out" (Revulsion), when we apply to a part, distant from the seat of the disorder to be cured, a revulsive remedy by which that cure is effected. Lastly, it is still manifest that, where a force has been used to direct fluids to a particular region of the body, with a view to relieve another region labouring under disease,—we have effected that object by merely changing the location of those fluids (Derivation). The reader will not forget, that, in all these observations, I mean strictly to confine myself to what happens in the external treatment of disease.

8. The proof that the three preceding negative propositions are correctly stated, is to be found in what actually happens in practice —I mean in the treatment of disease by the agency of one of the three modes of external medication just described (7). When do we find, for instance, that a blister may be substituted for leeches with equal effect—or dry cupping for a blister? Can each of these modes stand as the representative of the other two? or can the three together be taken as representing, indifferently, the action of each? Were it so, we should be more fortunate than we generally are in the removal of disease by external treatment.

9. It must be admitted, then, that the three terms in question are equally deficient in correct meaning, as well as in just application, individually and collectively; and that, therefore, whichever of them we adopt in practice,—whether that of Counter-irritation, or Revulsion, or any thing else,—we must employ the term as giving only an idea of the means we propose using in the treatment of certain diseases, but not as explaining or accounting for, in a satisfactory manner, the peculiar—the singular—I would almost add, the mysterious agency—through which the cure is effected.

10. With this understanding, it becomes nearly a matter of indifference which term we employ; and hence, while the practitioners in this country have adopted the more vernacular term of "Counter-irritation," those of France have preferred and adhere to the more classical one of "Revulsion." In both countries, however, but particularly in the latter, the subject has, within the last ten years, occupied much of the public attention, in consequence of the several endeavours made, by talented and highly respectable individuals, to revive a system of medication which had undeservedly fallen into disuse, except in cases of very acute disease.

11. If ever there was a reason for taking the distinction on which I have insisted, as well as the limitation I have laid down, in the use of terms too indiscriminately employed, it is on the present occasion, when I purpose to introduce to public notice a mode of curing many very important diseases by certain external appli-

cations,—the action of which is, at times, so instantaneous, that the word "Counter-irritation," implying as it does a sensible duration of action, would seem misapplied. I have, however, adopted it, for want of a more correct and comprehensive expression. Nor is that action, in some disorders, instantaneous only, and therefore different from ordinary counter-irritation;—it is also convertible, according as it is wielded, into ordinary counter-irritation, or into either of the other two modes of action—namely, Revulsion and Derivation.

12. One of the external applications to which I allude I have found to produce four very distinct and well-marked actions—or, if the reader pleases, four consecutive degrees or varieties of the same action. Three of these are identical with the three modes of action already described (2, 4, 6);—the other, or the principal mode, judging only by its manifestation when employed, and by its rapid success, is not comparable to any of them. It stands alone; I believe it never to have been obtained before by the ordinary means of external medication; and its influence on the nervous system admits of only two plausible solutions: that of a *shock* (dissimilar, however, in every respect to that of electricity or electro-magnetism), and that of a rapid absorption of the substance employed. It is not possible to explain what takes place under the almost magic influence of the application alluded to, in all cases of acute pain of the nerves, of spasm, of nervous headache, and of very intense toothache,—unless we adopt one or the other of the preceding solutions. Yet who shall say that either of them is correct or proved? I vouch for the facts, and I offer only conjectures for their solutions. The facts themselves are amply recorded in the sequel of this volume.

SECTION II.

IN WHAT THE AGENCY OF COUNTER-IRRITATION, REVULSION AND DERIVATION, IS SUPPOSED TO CONSIST.

Humoral Pathology and Solidism—The one admits Revulsion, the other Counter-irritation—Doctor Sabatier's work on "Revulsion"—Agrees with the English writers in defining, but not in explaining, the two terms in question—Example—Effect of sudorifics said to arise from Revulsion or Counter-irritation—Our ignorance as to the real nature of either—The two terms made convertible by the latest English authors—The term "Derivation" exploded—Summary of our knowledge in respect to the general question.

13. When we try to comprehend the mode in which what has been called Revulsion is brought about—and the same is to be observed of Derivation—we find ourselves incapable of coming to a satisfactory conclusion, without adopting as the key to that phenomenon the doctrine known under the name of Humoral Pathology;

by which is meant that theory in medicine whereby the principal disorders of the human system are supposed to depend on—to affect —or to be connected with—the humours of the body. That doctrine, after reigning for a longer period than any other medical theory, was discarded for another, founded on chemical theorems; and this, in its turn, gave way to Solidism—the system principally prevailing at the present time. It was the profession of such a system, that gave rise to the necessity of substituting for the word "Revulsion," the term which supplies the principal title to this volume;—for the former term, as I have before stated, and the other twin term, Derivation, can only be explained through the agency of the humours; whereas "Counter-irritation" is essentially an effect produced on solids,—although the salutary effects resulting from it seem, in some instances, to depend on some change in the fluids. How then the French, as well as the English practitioners, can reconcile to themselves the use of two such different terms, with two such different meanings, for the purpose of denoting one and the same effect, it is not easy to explain. But the case is so.

14. Looking to one of the most approved of the modern writers on this subject in France, Doctor Sabatier, of Orleans, to whose memoir, entitled "Les Lois de la Révulsion," a gold medal was adjudged, six years ago, by one of the medical societies in Paris,—we find that he defines Revulsion in nearly the same terms in which Counter-irritation has been defined by the best English writers of the present day. But from the examples adduced by both authorities, as illustrations of their respective position, it appears evident that they do not mean to illustrate one and the same agency on the human body. Yet their definitions are alike.

15. Let us take one of these examples, and see how it is worked out by both classes of writers, to suit their respective purpose. The efficacy of sudorific medicines, say the partisans of Revulsion, may be referred to an excitement of the internal organs, by which fluids are impelled to the skin: that is, the matter of perspiration is *driven* to the external surface, by *irritation* applied to the internal surface of the stomach, &c. Here the humoral pathology plays a conspicuous part. But what say the friends of Counter-irritation on this point? If after a suddenly checked perspiration, which has given rise to irritation of the internal surface of the body, we expose the external surface of it to the counter-irritating effect of increased warmth, either in the shape of a vapour-bath or heated air, an increased action of the perspiring vessels of the skin is soon produced, which first goes to balance, and next to overthrow, the inward irritation, or the cause of disease. Here the explanation of the agency employed requires not the assistance of a supposed transference of fluids; yet who can deny that, in both the attempted explanations, the same train of phenomena is involved, and the same ultimate result?

16. Other general familiar examples might be adduced as a fur-

ther proof of the discrepancy of opinion which exists, in two of the most enlightened of nations, respecting the nature of the agency of Counter-irritants and Revulsive medicines. But it would be a waste of time to prolong the consideration of the subject; inasmuch as it must be admitted on all hands that, with regard to that agency, and the laws by which it is regulated, Counter-irritation, as well as Revulsion, is still like a sealed book to us. Whenever we attempt to define it, we can only refer to and describe its visible effects, as Doctor Sabatier has correctly observed, and we can do no more.

17. What has been stated of Counter-irritation and Revulsion, applies with equal truth to the third phenomenon, "Derivation," already described (6). This term, however, has been completely exploded by the supporters of Solidism; and the signification which the ancients attached to it in order to explain the relief obtained in diseases of the eyes for instance, by the application of a perpetual blister behind the ears—or in certain diseases of the head, by the establishing of an issue or a seton either in the nape of the neck or in the arm—is confined by the moderns to the two other terms so often alluded to. Indeed, by the use made of them at present, the two terms in question have been made convertible expressions—nay, almost synonimous;—as may be seen in the latest medical writers of this country, who employ indifferently, and sometimes both together, as identical, the words "Revulsants and Counter-irritants," in speaking of external remedies capable of promoting Counter-irritation.

18. Our knowledge on this subject, therefore, amounts to this, and no more. A disease which is supposed to be caused by an undue excitement of any specific part of the body, it matters not whether it be internal or external;—or by an exaggerated sensitiveness of that part, which is a second degree of intensity in the exciting cause;—or by positive irritation, which is a third degree of intensity in that cause;—or, lastly, by inflammation even, which is the highest degree of intensity;—a disease so excited may be often cured, sometimes entirely, at other times only partially, by producing undue excitement—exaggerated sensitiveness—positive irritation—and, finally, inflammation,—in another and distinct part of the body.

19. This mode of medication is called "the cure of diseases by Counter-irritation;" the *immediate* effects of which we know to be one or more of the morbid symptoms just enumerated (18), and its *remote* effect we hope and very often do find, to be "the cure" of the disease. But of the manner in which either the immediate or the remote effects are produced, either the morbid symptoms existed or the cure effected, we are totally ignorant.

20. The treatment by counter-irritation is not a pure invention of medical science; it is an imitation of the method which nature spontaneously follows on many occasions, and by which it expedites the recovery of disease. Thus, if in a case of gout affecting the stomach, we succeed in relieving that important organ by means of

counter-irritants applied to the instep or the toes, we do so because we have often witnessed how nature quickly expels a dangerous attack of gout from the stomach, by the appearance of a well-defined, red, tense, and exquisitely painful swelling of the foot.

SECTION III.

WHAT CONSTITUTES COUNTER-IRRITATION, AND OF ITS PHENOMENA AND VARIOUS DEGREES.

Aggregate circumstances constituting artificial counter-irritation—It cannot take place without special changes taking place in some part of the body—Excitement accompanies those changes—The latter are marked by two classes of peculiar phenomena—Phenomena of the first class—They will vary in order and intensity—The whole of them not necessary to constitute artificial counter-irritation—Propriety of carefully choosing—Phenomena of the second class—Morbid symptoms cured—Correspondence between the morbid symptoms and the phenomena of the second class—Enumeration of the latter—Our knowledge of the mode in which the phenomena of the second class act in correspondence with those of the first class, in the case of disease, is quite imperfect—Such knowledge not necessary for the success of counter-irritation in practice.

21. We have just seen that COUNTER-IRRITATION presupposes, on the one hand, the existence of some disease in the human frame, dependent on some kind of irritation (18), and, on the other hand, the application, to some part of the body, of a special remedy or preparation, capable of setting up also some sort of irritation. Of the nature of the morbid irritation pre-existing, and to be cured by that which is artificial, it is not my province to treat. What we have to deal with in the present section is the consideration of those particular circumstances which arise, either at the time, or sometime after the external application of the special remedies or preparations alluded to, and the aggregate of which circumstances has been termed "Counter-irritation;" while the remedies or preparations themselves have received the name of "Counter-irritants." In this plain statement it will be seen that we leave entirely out of sight the question of "In what manner, and through what channel, or by what agency, the artificial succeeds in putting down the natural (morbid) irritation.

22. Artificial counter-irritation, as viewed in the present volume, may be defined to consist in a particular change or deviation from the natural state of a given part of the body, brought about at pleasure, by means of some known substance or mechanical agent applied to that part. Such a change or modification of the part, is invariably accompanied by an exaltation of its vitality, or, properly speaking, in other words, by excitement; nor can there be any counter-irritation tending to have a salutary effect, where there is not excitement also,—either visible to the eye in consequence of

what takes place on the surface of the part selected and the subjacent tissues, or sensible to the patient, from the sensation of pain and other acute feeling of the nervous system, which he experiences. The latter form of development in the excitement in question (conquent on the application of counter-irritants) is of a general character; whereas the first form of it is of a purely local nature.

23. The change or changes (22) produced while counter-irritation subsists, are distinguished by well-marked phenomena, which it will be necessary to enumerate, in order not only to be able hereafter to appreciate their value, importance, and various degrees of intensity, whenever we may happen to meet with them, but also with the view of knowing how and when to create them, and in what manner to increase or moderate them. Without such a knowledge, the powerful agents known under the name of counter-irritants, might, in our hands, become agents of mischief or sources of disappointment, instead of bringing health and satisfaction.

24. The phenomena adverted to (23) are of two orders: first, such as manifest themselves in the part acted upon by the counter-irritants; secondly, those which, as a matter of course, may be expected to take place in the part morbidly affected, in consequence of the production of the first phenomena. These first phenomena are—

a. Increase of circulation in the part.
b. Greater influx of humours towards it, which will partially remain and dilate the vessels.
c. Extrication of heat.
d. Redness of the skin.
e. Pain.
f. Progressive inflammation.
g. Vesication or ustion, or destruction of the skin, and sometimes of the tissues under it.
h. Serous or purulent secretion from the part, and sometimes sloughing.

25. These phenomena will vary, according to the constitution of the patient, the nature of the part to which the counter-irritant has been applied, and the kind of counter-irritant employed; but all of them may be expected to occur in the order in which they have been enumerated, under the influence of almost any counter-irritant. A common blister, for instance, or a mustard poultice, applied in ordinary cases and under ordinary circumstances, will give rise to the entire series of them.

26. It is not to be supposed, however, that the whole series is necessary to produce complete counter-irritation. Far from it. In some cases, *a* and *b* (24) will be found sufficient, and the disease, for which those two phenomena were set up, will thereby be found much relieved. In other cases, it is necessary to push the action of counter-irritation until the appearance of the fourth and fifth phenomena, *d* and *e*; while in a more obstinate case of disease, especially if it be deep seated, affecting a vital organ, spread-

ing over an important surface, or being of long standing, the additional excitation of the three last phenomena, *f*, *g*, *h*, is indispensably necessary to secure a recovery.

27. Independently of the preceding considerations respecting the first order of phenomena in counter-irritation, there is another which must not be forgotten. I allude to the various degrees of intensity of which each particular phenomenon is susceptible, and which call for our immediate attention in regulating our means of treatment. Thus, let us suppose that a practitioner wishes to produce the four first phenomena, and then stop, conceiving them sufficient for the cure of a particular disease; he will naturally apply himself, first, to the choice of the proper counter-irritant to be employed, and secondly, to the strength of its preparation, in order that the first four phenomena, and no other, may be the result. Taking as an example, the case of a sore throat. If I have reason to believe that a counter-irritant, which shall produce the effects *a*, *b*, *c*, *d* (24), will prove sufficient to remove the complaint I treat, I should apply a liniment of sweet oil, with a due proportion of volatile alkali, to the part, rather than an ordinary blister; for with the former I could, without much watching, and in no great length of time, subdue or relieve the complaint; whereas with the latter I might not, without trouble, be able to arrest counter-irritation at the fourth phenomenon, but the three others, on the contrary, might follow, *e*, *f*, *g* (24), and follow unnecessarily, as well as disadvantageously.

28. On the other hand, if the sore throat be of such a nature and intensity as to require the help of all the first seven phenomena, and they, too, in as speedy a manner as possible, I should hardly lose time in waiting for the effect of an ordinary blister to produce them; but, on the recommendation of the late Sir H. Davy, who has often mentioned the fact to me, I would rather apply at once a compress imbued with essential vinegar, or, what will be found more effective still, with the ammoniated counter-irritant, which it is the main object of this publication to make known. In either case, counter-irritation, from its first phenomenon (increase of circulation, *a*) to the seventh and eighth (vessication and serous secretion, *g*, *h*), would be produced in the tenth part of the time that an ordinary blister would require to give rise to them.

29. We are now to turn our attention to the second order of phenomena, occurring in the part morbidly affected, and which we seek to cure; or, in other words, to those which may be expected to take place through the agency of the phenomena of the first order. Here, again, our observations, made in a great number of cases, have enabled us to trace, more or less distinctly, the rise and progress of such secondary phenomena of counter-irritation, and mark their greater or less degree of activity. They necessarily correspond not only with the morbid symptoms intended to be subdued in the diseased part, but likewise with the first order of the phenomena (24), of which they are, in fact, the relative solutions. Thus,

taking the case of the sore throat (27), if we imagine it to consist in the three following morbid symptoms,

1st. Increased circulation in the lining membrane of the superior portion of the windpipe; with

2dly. A greater influx of humours to the part; and,

3dly. A dilatation of the smaller vessels, in consequence of the stationary condition of the blood in them (constituting what is technically called fulness or congestion);

Then, so soon as phenomenon *a* (24) shall have been produced by counter-irritation, the first morbid symptom above described may be expected to be suspended, and the first phenomenon of the second order, to be presently described (30), will occur at the same time. When phenomenon *b* arises, the second morbid symptom will stop, and the corresponding phenomenon of the second order (30) will appear. And by the time that *c*, *d*, *e*, *f*, and *g* (24), shall have come successively into full play under the influence of counter-irritation, the third morbid symptom will disappear, with the occurrence of as many corresponding phenomena of the second order (30) as will be necessary to complete the cure. It were indeed to be desired that matters were always adjusted with such mathematical precision; but, unfortunately, the reverse is not unfrequently the case, and the disappointment of an incomplete recovery will occasionally follow the use of external counter-irritants. Still, even in such cases, the assistance afforded to the physician by that method of treatment, in the production of relief from bodily suffering, is very considerable, and not to be obtained by any other means. Who does not know the infinite service which a strong blister, or other counter-irritant, applied to the side, after bleeding, will yield in the treatment of pleurisy, although, alone, it could not cure the disorder?

30. The phenomena of the second order, namely, those that have been observed to take place in the organs morbidly affected, when counter-irritation is induced on the surface of the body to cure them, while the counter-irritants are in action, are,

1st. A diminution in, or a total suspension of, the existing increase of circulation in the diseased organ;

2d. The withdrawal from that organ of the excess of humours which had been flowing towards it, and the dispersion of the stagnant fluids;

3d. A progressive decrease of redness, heat, and inflammation;

4th. A reabsorption of serous or purulent morbid secretions already formed, after the arrest of their ulterior formation; and

5th. The gradual, though slow destruction of morbid and unnatural growths, enlargements, and tumours in the organs affected, the result of inflammation or other causes.

31. It is hardly necessary to remark, in this place, that in enumerating these salutary phenomena, as the secondary products of counter-irritation, in acute as well as chronic disorders, we ought to guard ourselves against supposing that, in every such

case of disease, effects like those just mentioned, and in the same regular succession, may always be expected to take place. On the contrary, instances will occur in which one only, or two, of those salutary effects can be produced; in other instances, three, or the whole of them; and in a few cases none. Were it not so, the life of man would be spanless; but there are limits to all human efforts made to extend it; and our duty is to endeavour to do so, under those very limitations, with all the means that Providence has vouchsafed us.

32. It will be impossible, after attentively perusing all that has been stated in the present section, respecting the two orders of phenomena which constitute counter-irritation, and the wonderful harmony with which they seem to correspond together, not to be struck with the important fact, that a mighty hiatus—an unfathomable chasm—exists between the two series; or, in other words, that the two ends of a line of corresponding actions are far apart, and do not meet. In order that they might do so, it would be necessary to explain, as clearly as we have explained the phenomena themselves, in what manner, and by what physiological process, the connection of the one series of phenomena with that of the other can be established; we ought to trace the route of that connection, and demonstrate afterwards its inevitable result—namely, the ultimate production of health. But, alas! we positively know nothing on these points; and at the risk of seeming tiresome in repeating, more emphatically than I have already done, the same assertion, I cannot omit acknowledging that in this, as in many other questions connected with the mysterious laws of human existence, medical knowledge is not more advanced in the nineteenth century than it was at the dawn of civilised society. Fortunately, a correct or perfect knowledge of this kind is not necessary to the successful employment of artificial counter-irritation. The French, and some German writers, indeed, have attempted to explain the riddle—to solve the problem; and for that purpose, they have brought into play the doctrine of *sympathies* between parts and organs—between the external structure of the body and the internal—and so forth. Sabatier, the author I have already alluded to, has especially distinguished himself on this point in his work on Revulsion. But what do we know of the *sympathies* themselves, except as regards certain various effects which we imagine (by a reasoning purely metaphysical) to be the product of a particular principle, the nature of which, or indeed its real existence, we are positively ignorant of, although we assume it to be inherent in the human frame?

SECTION IV.

OF THE CONDITIONS NECESSARY FOR THE SUCCESSFUL PRODUCTION AND AGENCY OF ARTIFCIAL COUNTER-IRRITATION, AND OF THE OCCASIONS ON WHICH IT MAY BE EMPLOYED FOR THE CURE OF DISEASE.

Necessary conditions for the employment of artificial counter-irritation—1. An assurance that no other method of cure could be equally successful—2. The employment of a weaker rather than a stronger counter-irritant, where the former is considered sufficiently effective—3. A previous information respecting any peculiar susceptibility of the patient to the action of counter-irritants—How to obtain that information—Striking example—4. A perfect knowledge of the nervous structure of the part intended to be acted upon by counter-irritants—5. A similar acqaintance with the absorbents of the part, which seem to share very conspicuously in the production of certain phenomena of counter-irritation—6. A skilful and judicious choice of the part intended to be subjected to artificial counter-irritation—Occasions on which such an agency may be employed in the cure of disease.

33. It is always to be borne in mind, that before we determine upon treating any disease by counter-irritation, we ought to satisfy ourselves that there exist certain conditions which warrant its use, and the expectation of benefit from it. This precaution is, perhaps, more necessary in this than in any other mode of treatment, because by its very adoption we inevitably occasion a certain quantity of bodily suffering and change in the part acted upon, however short or temporary they be; together with a more or less active interferenee with the existing harmony of the functions of life.

34. The principal condition is, that either from previous experience in similar cases, or from sound analogy, we shall have come to the satisfactory conclusion in our mind, that the disease to be removed is one which the application of an irritating substance to the skin will wholly or very materially subdue, with a better chance of success than by any other means. Hence, the application of a stimulating and hot mustard poultice to the surface of the abdomen, in a case of moderate inflammation of the peritoneum, will only be proper when we feel convinced that, by its counter-irritating action, productive of heat, pain, and perhaps the abrasion of the skin, the internal malady will give way sooner and more effectually than by means of purgatives and the usual antiphlogistic medicines taken inwardly.

35. It is a second condition, that a stronger counter-irritant shall not be employed where one of less power may be expected to answer the required purpose. We are not warranted in ordering, in the case of dull inflammation of the liver, for instance, a liniment of tartarised antimony, which will produce severe and troublesome pustular eruptions, ere it can cure the disorder, if the recovery can be effected at a less expense of suffering, though, perhaps, more tardily, by means of the application of a simple ammoniaco-mer-

curial plaster. It will be seen in the sequel of this volume, that although the rapid production of vesication be often desirable in certain complaints, and although such an effect can be produced with perfect certainty by means of the specific counter-irritants which I shall have to mention in the following pages, I have never had recourse to its use in preference to that of a more ordinary blister, if the latter was deemed sufficient for the particular case under treatment.

36. A third essential condition to the successful production and agency of artificial counter-irritation, is the knowledge that the patient to be acted upon is constitutionally susceptible of being affected by counter-irritants, whether generally or under modifications, without deriving permanent injury from them after they have served the purpose for which they were applied. I will explain this by an example. An elderly gentleman was attacked with occasional spasms of the inferior extremities, which, after a few months, subsided into an almost paralytic insensibility of the limbs. As the cause of the disease was properly considered to be constitutional and not local, the most appropriate remedies were given internally by the medical attendant; but with them, the application of successive small flying blisters along both legs was deemed essential. When it came to the turn of the ankles and insteps to receive this application, the blisters were laid on without any particular notice being taken of the appearance of those parts. They were of that marbled, blue, and livid colour, which show either a stagnant circulation, or an ossification of vessels, both of which conditions are essentially inimical to the use of counter-irritants. After two or three repetitions of the blisters, they were given up as seemingly inactive; but in a few days, the part on which those applications had rested became of a crimson colour, and inflamed, the flaccid skin rose, it broke, a sore was formed, and mortification followed. I saw the patient at this conjuncture, in company with a very eminent surgeon, who had been in regular attendance; and I was glad I had seen the case, for it served ever after as a lesson to me. With difficulty the mortification was arrested; and although the sore which was left behind healed at last (though tediously), the paralysis of the limbs remained, notwithstanding.

37. As it is impossible in certain diseases to account for the successful influence which counter-irritation has over them, without supposing that the nerves existing between the part acted upon by the irritants, and that which is the seat of the disease, have been somehow or other implicated in the phenomena produced (24 and 30); it becomes a fourth condition towards our obtaining the successful agency of counter-irritation, that we should be well acquainted with the relation which the nerves of any portion of the surface of the body about to be made the seat of counter-irritation may have with the organ or tissue affected by disease and intended to be cured. Although the nature of that relation, and its mechanism,

be unknown to us, it is an indisputable fact that it exists, and that we see the effects of it every day. Hence, when we are about to set it in motion for the removal of a particular complaint, we should take care to select that part of the body which, through our acquaintance with the anatomy of the nervous system, we consider as likely to afford the most direct and the most abundant manifestation of that mysterious relation.

38. It has been more than suspected that some of the counter-irritating medicaments employed, may, independently of their local effect, assist in producing some of the phenomena of the second order (30) in the organ affected by disease, through the channel of the absorbent vessels. Another condition, therefore, to the ultimate success of the external counter-irritating treatment of disease must be, that where it becomes desirable that the cure sought for should be obtained in a certain degree by the absorption of a portion of the substance employed, we should select a spot to act upon with our counter-irritants, in which the absorbents are known to be in abundance, and select the time for our operation when those absorbents are supposed to be in the greatest state of activity.

39. Lastly, it is a condition necessary to the production of the result so often described in this section, by means of counter-irritation, that we should be well acquainted with the fact, that the same counter-irritant does not act on all the external parts of the body alike, although it may and will stimulate them all, more or less. This is a point of the utmost importance in the external treatment of disease, and one to which the older physicians, when the doctrine of Revulsion, as understood in this country (45), was the ruling doctrine of the day, paid the greatest attention; in consequence of which, they were frequently able to obtain many surprising effects by means of external medication only. No one can doubt, for example, that, in treating a distant and deep-seated morbid organ by means of the moxa, externally applied, the *ultimate* effects of that counter-irritant will be very different if its application be made on the inside of the leg, rather than alongside of the spine; although in each case the *immediate* effects on the part acted upon may be perfectly similar.

40. With regard to the particular occasions in which counter-irritation may be employed, as propounded in the title to the present section, I shall content myself with observing that it will be found useful, and generally successful, in the removal of diseases which primarily affect the solids; and, on the contrary, little, if at all, applicable in disorders of the fluids.

41. There is hardly a malady of the human body, implicating its solid constituents, which does not admit of being, or has not been, treated through the agency of counter-irritation, with the best results. This is an old doctrine; but the advances made in anatomical and physiological knowledge on the one hand, and our improved acquaintance with remedial agents and their virtues when applied externally, on the other, have extended considerably

the adoption of that doctrine all over the continent of Europe, where more attention is paid to it as a system, than has yet obtained with us. Hence, beginning our enumeration with the several affections of the head, including the brain and its membranes; and going on with those of the nervous system, especially such as are accompanied with pain, without omitting those in which the nervous power is palsied; proceeding next to the various disorders of the lungs, bronchia, and trachea—to those of the heart, particularly if of an acute nature—to those that affect the stomach, the liver, the intestines, and the uterus;—with such, also, as affect the muscles, the ligaments, the bones, and the fasciæ, as well as the articular membranes; we find spread before us a vast field of operation for the external treatment of disease; which latter it is the principal object of the present work to render more general in this country than it seems to be.

SECTION V.

OF THE VARIOUS MEANS RESORTED TO WITH A VIEW TO PROMOTE AND SUCCESSFULLY MAINTAIN ARTIFICIAL COUNTER-IRRITATION.

Epispastic, or counter-irritating medicine of the ancient physicians—Opinion of Hippocrates, Celsus, and Galen—Its practice coeval with man—Exists among all the savage as well as civilised nations—Classification of counter-irritants—First class, Mechanical; second class, Pharmaceutical—Their several divisions—General enumeration of counter-irritants—Three successive degrees of artificial counter-irritation—Various modes of putting counter-irritants in action—Number of the latter in the new "London Pharmacopœia" and other publications—Novel mode of exciting counter-irritation in Paris during the late cholera—The Lombard or Milanese counter-irritant—The Asiatic or croton oil counter-irritant—Le Fay, St. John Long, and Dr. Turnbull—Mechanical counter-irritants—Acupuncturation—Moxa—The wooden roller—Description of that instrument.

39. Under the name of *Epispastics* (which, by the moderns has been confined to common blisters or vesicatories), the ancient physicians possessed an almost interminable list of external remedies, capable of producing nearly every species of salutary change or alteration in the human frame labouring under disease. Their operation, therefore, in the estimation of those excellent practitioners, comprehended all those peculiar and direct effects which, in subsequent ages, have been explained on three specific principles (2, 5, 6); and their application was deemed effectual in almost every complaint. The founder of the first Greek medical school,[1] the most classical and learned of the Roman phy-

[1] "Hippocrate a senti toute la fécondité des principes de la médecine *epispastique* . . . . . il a fait presqu' entièrement consister sa pratique en cauterizations, frictions, fomentations, et autres moyens dont il ne cesse de vanter l'usage, et par les moyens desquels il opérait les guérisons les plus inattendues."—PINEL.

sicians,[1] and the still more celebrated physician of Pergamus,[2]—who commented on the writings of the former, and eclipsed the latter in reputation, and whose authority in the medical schools lasted until the seventeenth century,—equally practised external medication to an extent greater than that of internal medicine. Most of the means employed by them for that object, have since been discarded or neglected; and the modern science of medicine has reduced those which it still recommends for external use to a very small number indeed. That we have acted injudiciously in so doing, is the opinion of many of the most eminent writers of our day; among whom, the celebrated Pinel observes on this subject, "That a great number of rubefacients (epispastics) have fallen into disuse which ought to have been retained, and that it is to be regretted that a greater number of them should not have been retained; for in the hands of the older physicians, who relied more than we do on *epispastic medicine*, those remedies produced in very many cases the happiest results, such as it would be in vain to expect from any modern internal remedy whatever."

43. Indeed, stimulating, irritating, or epispastic substances, applied externally to the body for the removal of disease, seem to have afforded in all ages, and from time immemorial, the most powerful as well as the most efficacious means of cure. Recent writers on China—Mr. Davis, for instance—have assured us that the inhabitants of that country not only look to external remedies as the best means of cure, but possess some of the most refined processes for that purpose. Mr. Pearson has stated, in the Medical and Physical Transactions of Calcutta, "That, instead of our vesicatories, the Chinese resort to the means of producing counter-irritation, by drawing out and pinching, with the fingers and thumb, the skin and cellular tissue under it, until the surface is completely black. In this manner the commander of a ship is said to have been relieved of a severe headache, and an affection of the chest, under the care of a native female—who, for the first complaint, pinched the side of his neck until it was bruised; and, for the second, performed a similar operation on the side of the body."—(*Medical Gazette.*) We also know that the Japanese afford evidence of the same fact. Among almost all the newly-discovered populations, whether of the continents of America or Africa, or of the Oceanic islands, the few remedies found in use have been such as are applied externally, for the cure of almost every species of malady. In Europe, every nation, according to its greater or lesser degree of enlightenment, is found to have recourse to external applications or remedial agents, as means of recovery from disease. But these, as it was before observed (42), have been reduced to a

[1] "Quel usage ne fait point Celse des frictions contre la plupart des maladies chroniques?"—PINEL.

[2] "Galien et ses sectateurs, en adoptant les principes d'Hippocrate sur les *epispastiques*, se laisserent guider par des opinions systématiques, et donnèrent une étendue excessive à ces remèdes."—PINEL.

very small number; and although the recent revival of the moxa and acupuncturation, and the still more recent introduction of certain new chemical substances rubbed on the external parts of the body in the form of ointments—such as iodine, veratrine, delphine, aconitine, and strychnine—have been added to the modern catalogue of revulsants or counter-irritants, still the total number of those agents, compared with that employed by the ancients, is very limited. In this respect there is an ample field for making useful additions to the list.

44. The various means which may be employed with a view to produce a certain sensible action on the skin and subjacent tissues, in order to obtain therefrom another more important action in some other part of the body, which is to lead to the recovery of health, may be arranged under two classes:

1st, Mechanical; 2d, Pharmaceutical.

45. The first class admits of two divisions, the first of which contains the strictly mechanical: such as—*a*, dry and excessive heat, applied by means of clothes, or other means; *b*, hot air, or pure hot-water baths; *c*, dry frictions; *d*, percussion; *e*, rolling with a series of wooden rings, which the Indians find so useful in rheumatism; *f*, flagellation; *g*, titillation. The second contains those which may be called chirurgico-mechanical: such as—*a*, the application of leeches; *b*, ordinary cupping; *c*, dry cupping; *d*, scarifications; *e*, setons; *f*, issues; *g*, acupuncturation; *h*, the moxa, lately again introduced into the practice of medicine with infinite effect; *i*, metals heated in boiling water; *k*, the same made red-hot (actual cautery); to which may be added galvanism and electro-magnetism.

46. The second class embraces three divisions, extending to a very large number of agents, drawn from A the vegetable, B the animal, C the mineral kingdom. Under the first division (A) we find enumerated, Burgundy pitch, mustard powders, horse-radish bruised, water-cresses; every species of alliaceous roots, such as garlic and onions; capsicum, or cayenne pepper, and common pepper; powdered ginger; and some gums, such as guaiac, elemi, &c.; pellitory, the common nettle, the powder of savin, upright virgin's bower, the meadow anemone, the upright meadow crowfoot, the tobacco leaves, the root of the spotted arum, the mancenille; the juice of almost all the euphorbiaceous plants, of the wild cucumber, and of other plants; alcohol or spirit of wine, the oil or spirit of turpentine, the spirits of camphor, acetic acid, or essential vinegar, and yeast; together with many more substances, which it would be needless to specify.

47. Under the second division (B) are arranged, 1st, the various species and varieties of acrid flies, generally known by the name of "Spanish flies," constituting the principal element of ordinary blisters; 2d, the acid of ants (acidum formicarum); 3d, all ammoniated preparations, such as hartshorn, &c., which I consider to be

more of an animal than of a vegetable or mineral origin—since in the two latter kingdoms very small quantities of ammonia are to be found in combination; 4th, the dung of certain animals, which has been largely used by people in the humbler classes of life, as a curative agent externally applied in disease.

48. In the third division (C) we notice especially, 1, all the so-called mineral acids; 2, caustic potash and soda; 3, the caustic lime; 4, burnt alum; 5, tartar emetic; 6, creosote; 7, nitrate of silver; 8, white oxyde of arsenic; 9, corrosive sublimate; 10, mercurial preparations, known by the names of the white and the citrine precipitates, also the red precipitate; 11, muriate of antimony; 12, acetate or the sulphate of copper (verdigris and blue-stone); together with a few others. In this division I have no hesitation, from the experience I have had of them, to place also some of the thermal mineral springs of Germany, of which I have given an extended account in another and a recent publication; and especially those of Baden-Baden, Gastein, and Toeplitz.[1]

49. On looking at these lists, it cannot be denied that the resources which the endermic physician, or he who treats diseases by external applications to the skin, might command, are not inferior to those of the ordinary physician who relies principally on external remedies. Those resources or agents for internal application would afford him the means of producing on the human body three several and successive degrees of artificial counter-irritation, by simply attending to any existing difference in the respective energies of the agents employed, or to the manner and length of time of their employment; or, finally, to the various modes of preparing those agents for use.

50. The three several degrees alluded to are—1, rubefaction; 2, vesication; and 3, cauterisation. The first name has been applied to the redness of the skin—preceded by tingling of the part, and attended with a moderate degree of pain—which results from the application of counter-irritants of inferior power; as is the case when we apply a common mustard poultice for an hour or two to the skin, or an ordinary blister plaster for two or three hours only. The second denomination implies, as it is well known, an ulterior progress in the action of the counter-irritant, whereby the cuticle is raised from above the true skin, and serum is thrown out by the exhaling vessels of the latter, which can only escape by the bursting or division of the former. As to the third name, it signifies that, the cuticle or outer skin being once removed by the first impression of a counter-irritant, the true skin under it is next damaged or ulcerated, and a process of destruction of some of the tissues beneath it follows.

51. The manifold counter-irritants of the second or pharmaceutical class (46, 7, 8), which are capable, as has been stated (49), of producing the three several degrees or modifications of counter-

[1] The Spas of Germany, 2 vols. 8vo., 1837.

irritation, are employed in a variety of ways, constituting, in practice, almost an art in itself, and forming a special department of endermic medicine. These ways or methods are known under the names of Lotions, Embrocations, (Epithema of the older physicians,) Liniments, Pomatums, Cerates, Ointments, Plasters, Cataplasms, Medicated Frictions, Medicated Baths, Gases or Medicated Vapours—the several meanings of which are too obvious to need any explanation.

52. There is scarcely a writer on medicine, or a pharmacopœia, or a collection of prescriptions for domestic use, in which we do not find one or two receipts for some of the preceding preparations, to be used as remedies against acute as well as chronic disorders. The London Pharmacopœia contains not fewer than twenty-four such preparations, under the denomination of cataplasms, cerates, lotions, liniments, plasters, and ointments. Many are mere rubefacients; others vesicatories, and a few cauteries. The most powerful of the counter-irritants contained in that work is the compound camphorated liniment, in which a solution of ammonia, of the specific gravity of 0.960, plays the principal part.

53. In addition to the systematic and regular compounds, used in the practice of medicine as counter-irritants, to be found in the Pharmacopœias of every civilised nation, (and it is curious to remark that each possesses one or two of such compounds peculiar to itself,) we often meet in medical authors the composition of some one which is supposed to act in an especial manner. Thus, during the prevalence of epidemic cholera in Paris, the French seem to have derived great benefit from the application of the following counter-irritant to the back. "Take a long piece of woollen stuff, of the length of the back of the patient, and one inch wide. Soak it in a mixture of eight parts of spirits of turpentine, and one part of a solution of ammonia, and apply it along the spine. Over this lay a slip of cloth wrung out of hot water, and then pass along it a laundress's iron, made sufficiently hot to cause the fluids to be volatilised and the cloth to become dry. Perform the same operation every hour until the desired effect is produced." I have used this process with success during the cholera in London; but its complicated nature is objectionable, and occasions great loss of time.

54. Some medical practitioners in Lombardy, particularly at Milan, are in the habit of employing the volatile oil of mustard, dissolved in a due proportion of water, in order to produce rapid vesication of the skin. The oil is prepared in a particular manner, from the flour of mustard. When applied to the skin it raises a blister immediately, and when diluted, and applied by means of a compress, it will blister the skin in two minutes.

55. A receipt was circulated some years ago, capable of producing pustular eruptions as a counter-irritant, by a speedier mode than by using the tartar-emetic ointment. It consisted in mixing oil of croton with alcohol and a solution of ammonia, in given pro-

portions, which, when rubbed on the part, was said to give rise almost immediately to the elevation of pustules. If the application was made over the abdomen, it also produced a cathartic effect.

56. I need not allude in a special manner to *Le Fay's pommade*, which is supposed to consist principally of hellebore (*veratria*), and is sold as a patent medicine; nor to the method of the late Mr. St. John Long, who is believed to have employed the milky juices of euphorbiaceous plants, diluted with gummy mucilages. Nor, lastly, need I refer to the several pomatums or ointments charged with veratria, delphinia, strychnia, &c., which have been used in the French hospitals, with various and disputed results, for the last ten years—as I can testify from having witnessed their employment in those establishments—and which have since been brought into notice in this country by Dr. Turnbull. The least that can be said of these various modes of producing counter-irritation, in the several cases of disease for which they have been recommended—such as tic-douloureux, rheumatism, sciatica, headaches, and diseases of the visual organs—is, that they are uncertain in their operation, often producing no sensible effect whatever; while, in a great many instances, they have given rise to serious and formidable symptoms. At the same time it is impossible to deny that good effects have resulted from the use of the several external remedies here alluded to; and I can bear witness to more than one example of that fact, as connected with the practice of the late Mr. St. John Long, and with the use of Le Fay's pomatum; also with the employment of the remedies eulogised by Dr. Turnbull. But that they are dangerous preparations is an undeniable fact, because their poisonous principles may be absorbed into the system.[1]

57. In reference to the use of the principal counter-irritants of the first class, or the mechanical (45), I shall confine my remarks to two or three of them, as deserving particular attention; although they have not been sufficiently appreciated in this country, notwithstanding the strenuous efforts made to bring them into more general notice. I allude, first, to *acupuncturation;* secondly, to the *moxa;* and thirdly, to the *rollet.* It is curious, that, for the discovery of each of these three modes of producing counter-irritation, we are indebted either to the Chinese or the Indians—the honour being disputed by those two nations.

58. Acupuncturation found, a few years ago, a very able expounder and panegyrist in Mr. Churchill, who at one time had much practice, and met with considerable success with it in London. Why it is now again suffered to lie dormant, it is not easy to explain, except on the old principle, that no classes of people are more fickle and changeable in their likes and dislikes, their patronage and their discountenance of peculiar medicines and treatments, than the influential classes of society in England, and especially in the metropolis. Their judgment or determination of the merit and

[1] See Part 2, History of Cases, section 1.

value of any particular fashion or passing object of attraction, especially in medicine, is guided by *gregarious* instinct, and seldom by their own native good sense. Mr. Lawrence, in his surgical lectures, remarks that acupuncturation had been found useful in certain obscure painful affections, and in rheumatism, "but that it was now out of fashion."

59. The moxa is making some progress in the hospitals in this country, and is very little, if at all, adopted in private practice; yet, according to a very great authority, Baron Larrey, we deprive ourselves of one of the most powerful auxiliaries in medicine by neglecting the moxa. I find it stated, by the same eminent surgeon and physiologist, that the moxa is considered by him as a more powerful remedy than the issue or seton; and that, viewing it as a species of actual cautery, it is a powerful agent, and perhaps too much neglected in this country. Let us hear from a most worthy historian of their country, what the Chinese think of the moxa. "The Chinese physicians," observes Mr. Davis,[1] "reckon the application of the moxa or actual cautery among the most effectual means for the alleviation of local pain. Their moxa is prepared by bruising the stems of an artemisia, called *gae-tsaou*, in a mortar, and then selecting the most downy fibres. These, being set on fire upon the part affected, are said to consume rapidly, without producing any severe pain." It will be recollected that Sir W. Temple has recorded, in a very clear and able manner, his own recovery from gout, by the use of the moxa, agreeably to the Chinese fashion, the materials of which he had obtained from Batavia. In a subsequent part of the present volume I have described a mode recently adopted by the French, for raising an instantaneous blister; a mode which ought properly to be considered as a kind of moxa, and as such deserves to be mentioned in this place. For obvious reasons, however, I must refer for a description of it to the concluding part of the last section.

60. The rollet, or wooden roller, is an instrument of ancient date, and of general use among the natives of some of the southern parts of India, for the cure of rheumatic and muscular pains and swellings. Its introduction into this country for the same purposes is comparatively recent. The simplicity of the apparatus, the ease with which the patient himself can employ it, and the agreeable sensation it produces in the muscles, are its best recommendations. I have had no experience of its real utility, but I am assured, on good authority, that some of the lamest and the most painful limbs have been restored by the persevering use of the rollet, and nothing else. This little instrument consists of a wooden rod, nine or ten inches long, and an inch thick, perfectly smooth, on which are placed from four to six thick rounded and polished rings, of the same material, an inch and a half in diameter, and so arranged as nearly to fit the rod, yet left sufficiently free to roll over it and

[1] History of China, by H. Davis, 2d ed. 12mo. 1836.

round it on the slightest movement or pressure being made. They are put on at the end, opposite to that which serves as a handle for the patient to hold the instrument by, and are retained by a brass smooth button. When the instrument is applied to a part suffering from rheumatic pain, and a slight pressure is made on the part by means of it, at the same time that the instrument is moved backwards and forwards, the rings roll round the stick, and produce a peculiar friction, pressure, and shampooing-like effect, (for it partakes of a little of each,) which is by no means disagreeable, and which in due time relieves the disease.

SECTION VI.

OF AMMONIATED COUNTER-IRRITANTS, AND PARTICULARLY OF ANTIDYNOUS LOTIONS, A SPECIES OF POWERFUL EXTERNAL APPLICATIONS, CAPABLE OF PRODUCING ALL THE PHENOMENA OF ORDINARY ARTIFICIAL COUNTER-IRRITATION, AND SOMETHING MORE, WHICH THE USUAL COUNTER-IRRITANTS HAVE HITHERTO FAILED TO PRODUCE.

Rapidity of action in counter-irritants necessary in many cases—Must not be accompanied by serious local disturbances—Examples of the cautery and strong ammonia—The kind of rapid action required, specified—Acknowledged want of the latter in the ordinary counter-irritants led to the composition of the antidynous lotions—A reason for the same—Nature and effects of the lotions—Their extent of power—Conjecture as to their mode of action—Their superiority to other counter-irritants, both as a vesicant and as a remedial agent.

61. Large as the list of counter-irritants given in the preceding section may appear, there is probably not a medical practitioner, accustomed to use them in the treatment of disease, who at some period or other has not experienced either a total failure, or some disappointment in his expectation of cure, from their employment; —not because the disease to be cured demanded something different from external treatment, but because none of the external agents at his command were rapid enough in their operation.

62. In making such a remark, it is not intended to assert that among the several mechanical, or chirurgico-mechanical, or even among the pharmaceutical counter-irritants, there are none to be found which will produce instantaneous action. On the contrary, many such there are; as, for example, the actual cautery, boiling water, mineral acids, strong liquid ammonia, &c. But in all those cases in which these agents are employed, other effects, besides the rapidly evolved counter-irritation, are produced at the same time, which are deemed injurious instead of being salutary, and which therefore interfere with the simple and direct effect required. Thus, speaking of the actual cautery, or the application of a red-hot iron to the skin, the action resulting therefrom is truly instantaneous;

but, at the same time, we have an equally instantaneous destruction of the two skins, a disorganisation of the tissues beneath them, and an eschar, or crust, which, upon being removed, leaves a suppurating sore.

63. Again, if we apply the strongest solution of ammonia—say, for example, the one admitted in the new Pharmacopœia of London, of the specific gravity of .882[1]—we shall obtain, no doubt, an instantaneous impression on the skin, but along with it we shall have also the inconvenience of charring the cuticle instead of raising it; whereby, as in the case of the eschar produced by the hot iron (62), some of the more delicate effects of counter-irritation, especially the one desired, are arrested. We might observe the same thing of the strongest mineral acids, when used as counter-irritants; and the like remark applies still more forcibly and truly to all the preparations of Spanish or blistering flies, which are sold under various forms and denominations, as external means of cure from rheumatism, lumbago, palsy, extreme debility, &c. Of the latter preparations, we are acquainted with not fewer than one hundred and three, under the forms of extracts, ointments, cerates, liniments, plasters, tinctures, infusions, decoctions, injections, balsams, syrups, oils, ethereal solutions, &c. &c. To them must now be added the *cantharidine*, or the essential vesicating principle discovered by Robiquet, of Paris, in the Spanish flies, which has not yet been admitted into as general a use as it deserves in medical practice. The single observation I have to make respecting every one of these counter-irritating preparations, is this—that as it is impossible to fix or determine the precise dose of the powerful agent contained in them, which will enter or affect the animal system when used externally, so we cannot predicate the quantity of effect it will produce beyond what may be desired—particularly on such parts of the constitution as ought not to be affected at all, and which cannot be affected by the said agent without material injury. The utmost caution, therefore, is necessary in the use of all such counter-irritants; whereas the ammoniated preparations I recommend are neither obnoxious to such objections, nor do they require any such caution.

64. Now, the species of instantaneous action required from any external application, is that which avoids the two extremes described (62, 63), and which, while it apparently gives rise to no more than the ordinary phenomena of counter-irritation, produces at the same time on the disease under treatment a peculiar and wished for effect,

[1] It seems somewhat singular that the new Pharmacopœia should have admitted a stronger solution of ammonia without defining any process by which it is to be obtained, while it details the mode of preparing a weaker solution of the same substance; which, after all, it is said, may be extemporaneously obtained by reducing the strength of the former through the addition of more water. It would have been more regular, therefore, to have given a descriptive process of the strongest solution, and stated that the weaker consisted merely in diluting the strongest with water.

seemingly dependent on the instantaneous transmission of the counter-irritating influence, from the seat of the counter-irritant to the seat of pain. Such an action was not, to my knowledge, to be found in any of the hitherto known counter-irritants.

65. This deficiency induced me, about nine years ago, to study more minutely the effect of particular agents on the skin, especially such as belong to the ammoniated and spirituous class, with a view of endeavouring to discover some combination of them, which should give rise to an instantaneous and powerful action on any disease likely to be benefited by counter-irritation, even before the part itself, on which the external application was laid, could feel its disturbing effects. Some personal experiments made on myself, in the first instance, with simple as well as compound preparations of ammonia, spirits of wine, vegeto-aromatic spirits, camphor, and other stimulating and evaporable substances, differing from the few preparations already in use, and combined with water, or with oils, or butyraceous vehicles, or saponified into cerates—which experiments were afterwards repeated with the greatest success on some of the patients of two of the public medical institutions I belong to —led me to the knowledge of the fact, that, by merely regulating the several proportions of those ingredients, according to the nature and intensity of the case we have to treat; and, what is even more important, by mixing those proportioned ingredients in a particular order, instead of at random (paying due attention also to time,) combinations of a more powerful kind than usual could be obtained. I found, in fact, that without charring the skin, or producing an eschar, such combinations would, on a mere application to the external surface of the body, give rise to peculiarly energetic effects on the disease, in the brief space of a very few minutes (sometimes seconds only,) without necessarily producing at the same time rubefaction, vesication, and cauterisation;—although, if sufficient time for the purpose were allowed, the same combinations would produce the latter phenomena also, besides the mere first impression.

66. As the nature of that first impression, in all cases of pain, was ascertained to be an instantaneous removal of the pain itself—even where no other effect or phenomenon was required or permitted to arise from any of the applications in question—I gave to this class of counter-irritants the generic name of Antidynous, and, as such, I have been in the habit of using them very extensively during the last nine years,—as will be seen from the cases to be hereafter detailed.

67. But a very erroneous notion would be conveyed to the mind by such an appellative as the above, if it were supposed for a moment, either that the effect of instantaneously removing pain where it exists (which is a positive fact) was always a permanent effect of the antidynous applications, or that no other very striking effect could be produced by them worthy of being denoted by a particular name. Neither is the case. The *antidynous* applications relieve, suspend, and oftener than any other external application, remove

pain altogether ; but in some few instances the pain returns, to be again removed by the same application, and only for a short time. This is the case in an especial manner in those agonising attacks of Tic, dependent on *organic* mischief done to the nerves or the brain, in which the cause is continually in action. Here the pain is, at every attack, suspended by antidynous lotions ; but it returns again, though at longer intervals. No so in tic douloureux, which is the consequence of sympathetic action between certain organs—such as the stomach, for example, and the series of nerves affected with pain—for then the relief produced by those preparations is permanent.

68. But the relief of pain, in a manner almost magically rapid, is not the only phenomenon produced by antidynous or counter-irritating lotions. Another very striking characteristic of them is that of raising, if necessary, in a few minutes, a complete and genuine blister, equal to that produced by the best blistering ointment after several hours' application, or by scalding water, but accompanied by pain much less intense in degree, and much shorter in duration. Indeed, such is the advantage of this peculiarity of the counter-irritating applications in question, and so generally have patients availed themselves of it, that the name of vesicating agents might, with equal justice, have been applied to them. The first, however, of the two important effects produced, being, in my opinion, paramount to the second, which is not always desirable, I determined on the adoption of the qualificative I have selected ; a name I have often exchanged for that of "ammoniated," in consideration of the principal ingredient contained in the preparations.

69. If I were asked in what consists the peculiar action exerted on the human body by antidynous applications at the first moment of their being used—or how it is to be accounted for, or explained—my answer must be, "Nescio"—I know not. But conjectures might be offered, and not a few, some of which bear the semblance of plausibility. To one who has witnessed, some hundreds of times, the instantaneous effect alluded to, the irresistible conclusion which forces itself on his mind is, that the ammoniated application, on being first laid and pressed on the cuticle, acts on the nervous papillary terminations, which it deadens. In that case, it must further be conjectured that, just in the same manner as the pricking or irritating of the extremity of a nerve, gives rise to pain and irritation at its other extremity, so when the one (say the cutaneous) extremity of a nerve is deadened by any external agent, that effect is continued or projected to the other extremity, in which lies the morbid pain to be relieved. Thus, in the case of the Countess of ——, an attack of spasm of the most painful character, which used to begin at the lumbar, and thence ascended to the dorsal, and lastly to the cervical nerves, and which invariably lasted three or four hours each day, was stopped in thirty-five seconds after the application of an ammoniated lotion, of suitable strength, and did not recur again for a period of seventeen days. The application, in

that time, had not even produced heat, much less rubefaction; and yet all pain ceased, not only in the parts nearest to the application, but also in the most remote parts of the spinal column. Can such an effect be accounted for otherwise than by such a conjecture as the one offered above—or by another, which would make the effect to depend either on the absorption of the volatile particles of the ingredient used by the ordinary absorbent vessels—or on the transmission of such volatile particles along the sheath of the nerve implicated in the disease, just as the electric fluid travels and is transmitted along the surface of metallic tubes?

70. Be that as it may, the fact is certain and indisputable, nor can there be the smallest fear of contradiction to the asserter of it —that the antidynous preparations described in the present section, independently of the ordinary phenomena of artificial counter-irritation—independently, too, of a more rapid and successful vesication of the skin, affording an immense resource in medical practice during seasons of imminent danger—produce a something more which the ordinary counter-irritants have hitherto failed to produce —and must be considered therefore as a most important addition to that class of remedial agents among which they stand pre-eminent. I may add, likewise, that in not a single instance of their application under my immediate notice have I witnessed the smallest injury done to the part; although, on a very few occasions, either through design or neglect, and not unfrequently from an inopportune and injudicious use of them by persons unacquainted with their real power, extensive vesication, and an abraded, ulcerated surface, have been produced, where no such results were required or desirable.

SECTION VII.

OF THE OCCASIONS ON WHICH THE ANTIDYNOUS OR COUNTER-IRRITATING APPLICATIONS HAVE BEEN EMPLOYED; AND ENUMERATION OF THE DISEASES SUCCESSFULLY AND UNSUCCESSFULLY TREATED BY THEM.

Principal occasion: spasmodic and painful complaints—Instantaneous effect of the applications in such cases—Second occasion: muscular and tendinous affections of the body—Effect of the applications slower but not less beneficial—Third occasion: morbid affection of the circulation—Effect of the applications in them—Fourth occasion: anomalous diseases—Fifth occasion: disease of a mixed character—Sixth and last occasion: accidental and mechanical derangement, and some few diseases of the skin—Detailed list of the diseases treated by the counter-irritating or antidynous applications—Specification of those in which the same appeared to be inefficient.

71. The peculiar external applications mentioned in the preceding section, have been used on many and very different occasions, by myself, and, under my direction, by other medical practitioners in

the metropolis and in the country. The report of their success agrees with the result of my own larger experience respecting them, and our joint observations go to establish certain indisputable facts and principles, in regard to their applicability, which it will be proper to explain more distinctly.

72. The principal occasion on which I have had ample opportunities to try the effect and avail myself of the benefit of antidynous lotions has been when any of the spasmodic and painful complaints arranged under the class "nervous" presented itself to my notice. The nervous system, indeed, appears to be in a very special manner the most suitable field for the first and extraordinary impression produced by the counter-irritants under consideration. Their effect is often instantaneous, and in most cases, permanently advantageous. Indeed it was in a case, of the most inveterate as well as agonising character, of this class of disorders, that I first prescribed a suitable combination of ammoniated and spirituous and volatile substances, with a view to produce successful counter-irritation, without any local disintegration of the part on which the substances were applied. That case will be found at the head of those I have recorded in the present volume. The cases of disease on which I had acted before, with something analogous, and in its nature approaching to the compound camphor liniment of the P. of London, or to the opodeldoc, were likewise of the nervous class; but the counter-irritant then employed was not what it became afterwards, in the peculiar case alluded to, when it received its final completion at my hands.

73. The second occasion for using an antidynous or ammoniated lotion with effect, was in cases of disease affecting the muscles of the body, the tendinous tissues, and the membranous expansion connected with the muscular structure. The efficacy of the ammoniated counter-irritant, in such diseases, is not so instantaneously developed as in those of the nervous system, nor can it be obtained (in the majority of instances at least) without going through the first and even the second stage of ordinary artificial counter-irritation,—namely, rubefaction and vesication. Nay, in this class of disorders, when a considerable time has elapsed between their first appearance and the moment of treating them by counter-irritation, the third stage or phenomenon of that agency, on the part to which it is applied, namely, cauterisation, becomes necessary.

74. Certain diseases or morbid affections of the circulation, have afforded a third occasion for the employment of the new counter-irritants. Here also, not only the first impression or shock is required, but one or more of the subsequent phenomena of counter-irritation are indispensable to the production of salutary changes. In some instances, indeed, it is absolutely essential to the ultimate recovery of the patient, that the third phenomenon (cauterisation) should be developed, and not only developed but kept up for some time; an object, by the way, which can more readily be attained by an antidynous lotion than by any other known counter-irritant.

75. There are some anomalous or indefinable cases of disease, which after having resisted every well established mode of medical treatment, have at last been subjected, in despair as it were, to the action of antidynous applications. A fourth occasion, therefore, was thus presented, for a careful trial of those counter-irritants, which terminated in most instances successfully.

76. Finally, mixed cases of disease, partaking at one and the same time, in their nature or character, of two, three, or more of the classes of disorders already specified (72, 73, 74,) have offered a fifth occasion for resorting to the use of the same counter-irritants, with variable success; and a sixth occasion might be added, of certain accidental and mechanical derangements in parts of the body, as well as of a few of the more ordinary complaints of the skin, in which the ammoniated counter-irritants were used with advantage.

77. It is proper that we should now proceed to look to the specific diseases themselves that have been treated by counter-irritation in the manner so often alluded to in this section,—and that we should see what important malady, whether or not tending seriously by its nature to affect life, has been effectually cured by antidynous applications, with little or no assistance from any other species of medical treatment. The list of such diseases, as far as they have fallen under my notice in the course of nine years, may, for the sake of order and distinctness, be arranged as follows :—

A.—PRINCIPALLY AFFECTING THE NERVOUS SYSTEM.

1. Acute Neuralgia, { Periodical, / Permanent, } *Tic douloureux.*
2. Spasms,
3. Convulsions, } including { Epilepsy. / St. Vitus's Dance. / Hysterics.
4. Cramp.
5. Brow-ague.
6. Tetanus or lock jaw.
7. Highly acute toothache.
8. Nervous headaches.

B.—PRINCIPALLY AFFECTING THE MUSCLES AND TENDINOUS TISSUES.

9. Rheumatism.
10. Lumbago.
11. Swelled and highly painful articulations.

C.—PRINCIPALLY AFFECTING THE CIRCULATION.

12. Headache from fulness of blood in the head.
13. Congestions and sudden attacks of blood in the head.
14. Sore throat.

15. Early inflammation, { *a.* of the trachea and bronchia. / *b.* of the lungs and their membranes. / *c.* of the heart and pericardium. } Tending to consumption.

D.—DISEASES OF A MIXED CHARACTER.

16. Suppressed gout. { *a.* affecting the heart. / *b.* affecting the stomach.
17. Genuine gout.
18. Paralytic debility.

E.—ACCIDENTAL, MECHANICAL, AND CUTANEOUS DERANGEMENTS.

19. Violent sprains.
20. Pimples.
21. Biles.
22. The ringworm.

78. From this list it appears, that in twenty-two distinct complaints, many of them of a serious nature, counter-irritating or ammoniated preparations have been employed. In the sequel we shall see with what success they were so employed; and the detailed histories of the cases hereafter given, will clearly show the great value of those preparations. I do not assert that all the various disorders just enumerated (74,) and their modifications, have yielded to the agency of the preparations in question; nor that the latter agency was the only means resorted to in all cases for the cure of those disorders. On the contrary, a few of them have, on particular occasions, resisted that agency; others have been only momentarily benefited by it; while a few more have required a simultaneous employment of ordinary and internal remedies, to assist in and complete the cure. Among these several exceptions to the general rule of success are to be reckoned, chronic tic douloureux—chronic rheumatism of long standing—epilepsy dependent on organic mischief in the brain or any part of the spinal apparatus—lastly, rheumatic gout, in individuals whose constitution has been completely shaken by that disorder, or any other previous disease; although, even in this case, some good has been obtained from using the ammoniated counter-irritants. The second and fourth of the obstinate disorders just mentioned are of that number which require, in addition to the ammoniated or antidynous applications, an appropriate internal treatment. The other two are only partially relieved, but never cured, by counter-irritating lotions.

SECTION VIII.

OF THE PARTICULAR ADVANTAGES WHICH APPERTAIN TO THE TREATMENT OR PREVENTION OF DISEASE BY COUNTER-IRRITANTS, AND ESPECIALLY BY ANTIDYNOUS APPLICATIONS, WHICH ARE NOT FOUND IN THE ORDINARY METHODS OF CURE.

Advantages of natural and artificial counter-irritation—Example in illustration of the former—Death produced by the suspension of its action—A second example of a natural counter-irritant maintaining the equilibrium of health—A third and still more striking example of the same—A fourth example—Infantile diseases—Royal Infirmary for sick children—Result of experience there in reference to counter-irritation—Recapitulation of the examples and commentary—Advantages peculiar to the strongest of the antidynous counter-irritants—First advantage: its efficacy soon tested—"Time and perseverance" not necessary—A patient saved from immediate death by it, in a case of gout transferred to the heart—This effect contrasted with the slow operation of certain modern remedies—Second advantage: the patient is not long kept in suspense as to the good result of his case—Long attendance of the physician unnecessary. Third advantage: the certainty that the constitution of the patient can never be damaged by the treatment—Difference in that respect between the system of counter-irritation and the Homœopathic treatment.

79. The credit of many of the advantages obtained through the agency of antidynous or counter-irritants in the treatment of certain important diseases is shared by those preparations in common with many other counter-irritants; but the peculiar agency of the antidynous lotions affords besides to the person using them, other results of a satisfactory kind, which are in vain sought for in counter-irritants in general.

80. No one can doubt for a moment of the benefit derived from counter-irritants, whether they be the result of natural efforts, or established artificially and permanently, as in the case of a seton and an issue, or applied transitorily, like a flying blister, a mustard poultice, &c., in either maintaining the equilibrium of health or in restoring it when broken. An elderly lady had an open sore in one of her legs, which had continued for many years. She was otherwise in the enjoyment of perfect health; but the sore was an inconvenience, and in an evil hour she submitted to a succession of dressings, which stopped the discharge from it, and ultimately healed the ulcer. In three months from that time she died in great tortures, arising apparently from some serious affection in the abdomen. The family wished to ascertain, if possible, the cause and seat of the disorder, when it was found that almost all the principal clusters of the glands of the mesentery were either in a state of suppuration or incipient inflammation. I have no doubt that in this case the old sore was a natural external counter-irritant, which kept in check the internal mischief, by what is called derivation (6). The fatal effect of obliterating or interfering with such counter-irritants as are vouchsafed to us by nature, was moreover illustrated by the example of Louis XVIII. of France, whose death

followed close upon cicatrisation of most of the old sores in his legs. These examples prove the advantage of a natural counter-irritant.

81. A young lady, the niece of one of the most eminent judges this country could boast of twenty years ago, had an habitual purulent discharge behind the ears, which a surgeon of known popularity in the vicinity of London cured, by the application of an ointment containing corrosive sublimate. A few weeks subsequent to the cure, while traveling on the continent with her relatives, and under my medical charge, after a moderate dancing at a ball, the young lady was taken suddenly ill with an affection of the heart, and died in forty-eight hours. The authorities of the place having insisted on an investigation of the case, an examination was made by Dr. Dorat and myself, when it was discovered that the right ventricle of the heart contained an earthy calculus, resembling in external appearance what has been called a mulberry calculus of the urinary organs. The specimen is still in my possession.—A gentleman has been twice under my care who, during the autumn and spring, is subject to large biles. He is wretchedly low and miserable while the painful stage of the disorder lasts. As suppuration becomes fully established, his spirits and health improve, and at the end of six weeks after going through a crop or two of those furunculi and troublesome eruptions in almost every part of the body (although seldom in two different parts at the same time), he becomes quite a new man, in feeling as well as appearance. On one occasion it became particularly inconvenient to allow nature to follow the usual course during a threatened attack of the biles, and on the first blush of redness, after the application of several leeches to the part, preparations of lead were put on by the patient, and constantly kept on it, with a view to stop all further progress in the furuncular process. In this the patient succeeded: but in return, a state of health followed, which created alarm not only for the safety of the patient's life, but of his intellect also; for the degree of depression and hypochondriasis which ensued and continued for many weeks, was such as to lead one to expect the worst consequences. Here, again, the advantage of an occasional natural counter-irritant is manifest.

82. Another gentleman who, from the age of five-and-twenty, had carried about with him a most obstinate case of psoriasis in the palm and back of his right hand, which, at times, would extend up the wrist and arm, continued to be in perfect health, so long as that eruption was not tampered with. Every attempt, however, was made by various medical men in this and foreign countries, to cure and eradicate so troublesome a disorder; but years elapsed before any permanent impression could be made on it. When consulted by this individual, who at times placed entire confidence in me (except when I assured him that the disease stood in lieu of some internal malady, and ought not to interfered with lightly,) I gave it as my opinion that all attempts to check the eruption suddenly ought to be abstained from, and might be

fatal. The advice was disregarded. I saw, many years afterwards, the individual in question, with his hand as smooth as if it had never suffered from the former complaint. The result had been brought about by the use of a particular pomatum, which had been recommended empirically, but of the nature of which he was ignorant. He was then labouring under every symptom of unmitigated dyspepsia, accompanied by a dull, heavy, incessant pain in the right side. He died almost unexpectedly a twelvemonth after, aged forty-four years, and on examination, a large tumour, containing purulent matter, was found, placed between the liver and duodenum, and connected with both. I hold this to be a third capital illustration of the advantage of a natural counter-irritant, which it is always dangerous to interfere with.—Of the evil effect on the general health, and hastily drying up the morbid exudations of this same complaint, I have had within the last few weeks another marked example, in the person of an eminent surgeon-dentist in this town. The ebbing and flowing of his health, as connected with the appearance or disappearance of a cutaneous disorder on his hands, was fully admitted by him, when I called his attention more distinctly to the phenomena of his case.

83. Another example, illustrative of the same doctrine, I derive from my own experience, in the treatment of diseases of children. During a period of ten years that I attended as principal medical officer at the Royal Metropolitan Infirmary for Sick Children, of which I had the honour of being the founder in 1820, and which has recently assumed the title of Royal Hospital, I have treated upwards of ten thousand young patients, many of them mere infants. In the course of that practice I observe that whenever a child, having a natural discharge and ulceration behind the ears, or the milky tetter on the forehead and face, or the peculiar impetiginous eruption at the bend of the arms and knees, which is not uncommon between the age of six and eleven years,—was placed under surgical care, for any of those local affections (although in other respects apparently in good health), and the discharge was suddenly checked,—either inflammation of the membranes of the brain, or hydrocephalus followed, which it became no easy task to remedy. On the other hand, children affected with either of the two latter very serious complaints, were often brought under my notice, who suddenly got well on the spontaneous appearance of the before mentioned eruptions, or upon the back of the ears becoming suddenly and extensively sore. These examples are not brought forward as offering any thing new: for there is scarcely an observant person, be he medical or not, who in all probability has not seen many such; but they are quoted with the view of introducing with greater aptitude the consideration of the advantages of using counter-irritants artificially. For, since nature points out to us, in a variety of ways, the benefit to be derived from the existence of spontaneous counter-irritants, it follows, that whenever these have been injudiciously interfered with, or checked,—the establishment of artificial

counter-irritation in lieu of them must lead to the happiest results; results hardly to be expected from the slow course of an ordinary treatment.

84. Accordingly, it may justly be assumed, that in all the cases already mentioned (80, 81, 82, 83), had artificial counter-irritation been resorted to, immediately upon observing the sudden deterioration of the health of the patient consequent on the suppression of the natural counter-irritant, the untoward results which have been mentioned would probably have been prevented, or, at all events, considerably retarded. This is what was actually effected in the case of a gentleman subject to biles (81), and in most of the cases of children affected with complaints of the head, in consequence of the forced suppression of a retro-auricular, or impetiginous discharge (83). In all those instances, the application of instantaneous counter-irritants produced the desired diversion against the common enemy, viz. the original and constitutional disorder, to keep which at bay a natural or an artificial counter-irritant had become necessary.

85. The exhibition of internal medicines in cases such has I have described, would be of little avail. They are too slow in their operation, and more than problematic as to the result. In this respect, the superiority of the external over the internal treatment is quite manifest. That superiority is even more evident in regard to the antidynous applications, the peculiar agency of which on the human body, and their more rapid effects, will be admitted to be some of their best recommendations, when the cases described in the following pages shall have been attentively perused. Those recommendations, indeed, are of such value, that we may consider the external treatment of certain diseases by the ammoniated preparations in question, to be, in more than one point of view, far preferable to any other treatment, whether it consist in the external application of ordinary counter-irritants, or in the internal exhibition of medicine.

86. Looking at the question merely as it concerns the patient, both with regard to his health and with regard to his interest, the plan which I propose, and which I have had so many opportunities of carrying into effect in the course of the last nine years (as will be seen fully illustrated by the medical histories that follow), offers one great advantage in a majority of cases, which no other method affords; and it is thus that its efficacy is soon tested. Accordingly it will be found that in the larger number of the diseases for which I have recommended the counter-irritating treatment by means of antidynous lotions, their value as a curative agent has been proved or disproved almost at once; unlike, in that respect, to some of the recently-published methods of treatment which have for one of their essential conditions to require "time and perseverance" for the cure. On that condition, indeed, the physician generally insists, in order to prevent disappointment, before he can promise a recovery by the ordinary medical treatments.

87. But in respect to the treatment which I recommend, the

contrary is the case. By that treatment it is proposed to combat any of the maladies specified in the last section, through the agency of particular external applications which are to produce an *immediate* sensible effect, and that of a salutary, relieving, and generally curative character. The patient, therefore, can judge of the value of what is done for him as well as his medical attendant. Take we for example a case of suddenly retroceded gout, in which the most formidable symptoms have arisen, connected with a disturbed and almost suspended action of the heart, and in which, an antidynous lotion being laid at once over the pale and flaccid seat of the departed gout, the former redness, swelling, throbbing, and painful condition of the part are as suddenly recalled, whereby the heart becomes quickly relieved, and the patient is snatched from death. Who can deny that in such a case as this the treatment has afforded to the patient the singular advantage for which I contended, in behalf of the particular counter-irritant employed? Would the rubbing in of the veratrine or delphinia ointment over the part have produced so instantaneous a release from so formidable an attack? Yet such an instance, nay more than one, as the result of the application of antidynous lotions, will be found among the cases to be hereafter detailed.

88. Another great advantage of this method of cure, consists in the speedy manner in which the likelihood of its proving successful is demonstrated to the patient; so that he is never kept long in suspense as to the result, nor is the physician called upon for a long attendance on the patient whom he subjects to this mode of treatment. With the exception of cases of chronic rheumatism, tracheaïtis bronchitis, or incipient consumption, or inflammation of a long duration, either local or general,—in all of which I have had to continue my attendance on the patient for a proportionate length of time,—all the rest of the complaints which came under my notice, and which I considered as susceptible of being treated by counter-irritation (and I may assert with perfect truth, that few medical men of the present day have had more extended experience than I have had within the last nine years on that subject)—all those complaints, I say, were relieved immediately, and most of them cured, by one, two, or three applications only of a counter-irritating lotion, the majority of them permanently, and the rest for a longer or shorter period of time. The very first case which will be found at the head of the list, is a striking illustration of the power of the application in question, in at once suspending, under the most trying and unfavourable circumstances, for a period of forty-two days, paroxysms of acute pain which, for *twenty-two* years before, had never failed to attack the devoted sufferer, at some period or other of each succeeding day of his life. Now the contrast between such a mode of dealing with any important disorder by means of the counter-irritants like those I propose, and that pursued by other practitioners who have likewise from time to time recommended particular agents in order to produce a species

of counter-irritation, is very striking. In the method I bring forward, there is no rubbing, day after day, to effect a certain purpose —as is the case with the veratria and other ointments: but the purpose required is obtained presently, and simply by once laying the counter-irritating agent on the part selected for that object.

89. A third, and no mean advantage of the same method of cure is the certainty that, should we be disappointed in our expectation of obtaining by it an instantaneous recovery, or one within a reasonable period of time, we at least incur no risk of damaging the constitution of the patient, as is unfortunately too often the case with regard to the ordinary poly-pharmacous treatment of diseases of the present day, even when judiciously and properly directed by the most skilful physicians. This is still more manifestly the case when the disorder to be removed is of a chronic kind, and requires a protracted use of remedial agents, internal or external, according to the species of treatment preferred for that purpose. No one can doubt, for example, that in the case of an obstinate affection of the liver, in which for a series of weeks the lengthened use of "the blue pill" has been deemed necessary for its ultimate and successful removal,—a certain degree of constitutional derangement is often found to remain behind, for the cure of which some subsequent treatment is required. Now the contrary is the case where disease requires even a *protracted* application of the ammoniated counter-irritants; for there is no example in which such an application has been followed by any derangement. I might, indeed, contrast the latter mode of treatment with that system of predicated infinitesimal doses of powerful medicines, which must be a thousand times repeated before they can cure any complaint. Yet many of those complaints the external counter-irritants have either cured at once or within a short period of time, without any indirect ill effect on the constitutional power of the patient; whereas it is notorious, as regards the system alluded to, that many patients who had lost the complaint for which they had had recourse to homœopathism, found themselves with a more deteriorated constitution at the end of their protracted treatment. We may, therefore, in recapitulating what has been stated in the preceding paragraphs (85, 86, 87, 88, 89) frankly assert that the external treatment of the diseases specified in this volume by the class of counter-irritants I propose, is, in more respects than one, to be greatly preferred by the patient to any other.

SECTION IX.

OF THE GENERAL AS WELL AS ESPECIAL RULES WHICH SHOULD GOVERN THE APPLICATION OF THE ANTIDYNOUS OR AMMONIATED PREPARATIONS, EITHER AS SPECIFIC OR AS ORDINARY COUNTER-IRRITANTS.

Choice of a place for the application—Direct, and indirect or sympathetic impression—Choice of time—Duration of the application—Manner of using an antidynous lotion—Its simplicity and promptitude—Instrumental contrivances in aid of it—Precautions—First sensation produced by the lotion—Subsequent effects—The author's own personal experience—Immediate relief from pain, by means of the lotion—Transition from rubefaction to vesication, and from the latter to cauterisation of the skin—Mode of obtaining an instantaneous blister by the lotion—Other modes related—Superiority of the former—Its great advantages in practice—Manner of treating the blistered surface—Conclusion.

90. It cannot fail to strike every person the least conversant with the action of medicines, that a remedy of such energetic power as the ammoniated compound lotion, and other ammoniated preparations, which I recommend for the external treatment of disease, ought to be used not only with judgment, but also under certain restrictions, cautions, and regulations. These then I shall proceed to detail in the present section. They may be referred, first, to the choice of the place to be acted upon; secondly, to the selection of the direct or indirect sympathetic order of impressions to be produced; thirdly, to the choice of time; fourthly, to the length of duration of the application. Again, we shall have to consider, first, the mode of applying the strongest of the ammoniated lotions, with the various contrivances used for that purpose; secondly, the after treatment of the local effects produced by that lotion; and thirdly and lastly, the peculiar and characteristic sensations excited by the remedy in question. All these points I shall proceed briefly to explain.

91. And, first, as to the choice to be made of the place on which the counter-irritants in question should be applied. We know from experience that if we are desirous to allay, by counter-irritation, the pain and inflammation under which some particular internal organs may be labouring, it is not sufficient to lay the counter-irritant on any part of the surface of the body indiscriminately, but that some one especial part, rather than any other, should be selected for that purpose. This assertion may be at once illustrated by reverting to the case of retroceded gout treated by counter-irritation (87). In that case no practitioner would have dreamed of applying the counter-irritant on any other part than the one which I applied it. This choice of place cannot be determined from theoretical principles, but must depend on our own intimate knowledge of the relation that exists between certain inward organs, and certain portions of the skin. Indeed, on that knowledge rests,

in a great measure, the probable or improbable good result of the counter-irritation we wish to establish; and it were desirable that, instead of the mere empirical acquaintance we possess on this question we were more deeply, versed in the mysteries by which it is surrounded. At present we are not so fortunate, and we must therefore be satisfied with the guide of mere experience and observation.

92. That guide tells us, that independently of a certain direct connection between the organ to be cured, and that part of the skin which is to be the seat of a counter-irritant in order to produce that cure, there appears to be another and indirect connection, which has been attributed to a mysterious "something" called *sympathy.* This "something," at times, plays so important a part in the phenomena of counter-irritation, that we cannot well excite, appreciate, or avail ourselves of the latter, unless we have attentively studied the visible and irrefragable manifestations which are supposed to be the offspring of sympathy. If I apply a few atoms of Spanish snuff to the very lowest edge of the mucous lining of the nose, or pituitary membrane, I instantly experience, at the highest point of that organ, a peculiar irritation, followed by a sudden effort to get rid of the irritating agent,—constituting the act of sneezing, which is accompanied by a watery defluction from every point of the said membrane investing the lachrymal sac, the palate, the pharynx, and the eustachian tubes, as well as the organ of smell. This connection between the margin of a mucous membrane and any other portion of it, no matter how distant, is known and may be explained on the principle of mere continuity, and identity of texture. But when we apply to the middle of the arms a blister to relieve certain affections of the lungs or their investing membrane,[1] or when, in cases of inflammation of the lining membrane of the abdomen, we succeed in relieving it by means of counter-irritants put on the inside of the thigh or on the calf of the leg,—we witness the salutary effect, but cannot tell the reason of it, except that mere empirical observation has taught us to believe that there exists what has been called a sympathetic relation between the several parts alluded to. By what species of complicated and mysterious process does the counter-irritating impressions made on the sole of the feet by tickling excite laughter,—which, in some sudden morbid seizures of the diaphragm and stomach, has been found so advantageous? We should, therefore, be well informed on the subject of direct as well as indirect connection existing be-

[1] At the very moment of writing these lines I happen to have under my care a young lady labouring with severe bronchial inflammation of the lungs, which has become almost suddenly relieved on the appearance of an abundant crop of pustules around a large blister, placed on the upper part of the left arm. Although several vesicatories had been applied before to the chest itself, in order to relieve it from its state of oppression, their effect had been as nothing compared to what followed this spontaneous eruption on the arm.

tween certain parts of the internal body, and its various internal organs, if we wish to make a correct choice of the place on which we are about to excite counter-irritation for the advantage of the patient. With several of these connections, medical practitioners who have paid particular attention to the physiology of man are well acquainted, and they are fully capable of making a proper application of counter-irritants. It would be out of place to enumerate them in a popular work like the present, which does not pretend to teach to the medical world any new physiological fact or theory, but simply aims at divulging the facts themselves to the general reader.

93. The choice of time, and the length of the duration of the application of any counter-irritant, next claim our attention. In regard to the first point. I have found from experience, that the sooner the application is made, the quicker and surer is the good result obtained. This is especially true of antidynous or ammoniated lotions, which, though, like many other counter-irritants, they may be of use in many cases of disease when applied after the employment of other remedies, they are even more useful if applied before any other remedy; and so useful, indeed, in all such cases, as to preclude the necessity of using any other remedy afterwards. Thus, in the instances of headaches,—which are, perhaps, the most triumphant examples of disease cured instantaneously by antidynous lotions, provided they be purely nervous,—it often happens, that such headachs are complicated with derangement of the stomach, for which the lotions afford hardly any relief. Yet, as I am sure to be able to disarm the pain in the head of much of its acuteness, by silencing at once that portion of it which is dependent on the nerves, I do not wait to apply the counter-irritating lotion until after other remedies have been administered with the view to restore the due action of the stomach; but choose the very first moment, the onset of the disorder as it were, to lay the lotion on the affected part, whereby the pain is greatly relieved. So in all other examples of disease, we should be guided in our choice of time for the application of the counter-irritant, by a minute examination of the case itself.

94. The same remark applies well to the point of determining how long the counter-irritating application should be suffered to remain; except that, in such a question, we have two or three other elements to consider, namely, which of the three successive phenomena of counter-irritation we are desirous of producing—what is the degree of susceptibility of the cutaneous system of the patient—and on what part of that system have we determined to apply the counter-irritant. When these minor problems are solved, the main question can be readily answered. It may, however, be stated in general terms, that the application should seldom last longer than from one to six or eight minutes, and that it has often happened to me to find that less than one minute of time in the application was sufficient for the purpose of producing the desired

alleviation of pain and spasm. But in order to excite the higher degrees of counter-irritation, namely, vesication and cauterisation, as many as ten or twelve minutes are necessary. In some rare instances, however, after having watched the effect produced on the skin by the counter-irritant at the termination of ten minutes, I have deemed it necessary to bind the external application to the part, and leave it on till it was dry; a result which takes place very speedily, owing to the almost ethereal volatility of the lotions.

95. The manner of using the counter-irritant I propose is as simple as its effect is expeditious. We do not require, as in the case of most of the modern pomatums, ointments, cerates, and liniments, charged with euphorbium, pellitory, iodine, veratrine, aconitine, creosote, and delphinia, to rub the part affected with the ammoniated preparation morning and evening, for a length of time, and during several successive days, in order to produce the desired effect. All that we have to do, is, first to impregnate with the colourless and transparent liquid, either a piece of linen folded six or seven times to the size of the part intended to be covered, or a piece of thick and coarse flannel; and secondly, to lay either of these on the spot, pressing with the hand at the same time, very steadily and firmly, the said linen or flannel, over which there should be placed a thick towel, doubled several times, so that not only the evaporation of the lotion may be impeded, but the hand employed in pressing the application to the part may not suffer damage from any evaporation or from contact with the liquid. In some parts of the body more convenient than others, the readiest and most effectual mode of pressing down the application, is by tying over it a towel or thick bandage; but to this mode there is the objection that we cannot, under certain circumstances, inspect the part as quickly and as often as is required, so as to judge, from the effect of the application, when to stop, or how long to persevere in using it.

96. On certain parts of the face, such as the temples, forehead, jaws, or chin, the application in the way described (95), must be made with considerable caution, lest the effluvia of the liquid should affect either the eyes or the nostrils. I generally place over either one or the other a thick covering to protect them, before I apply the lotion on any of the parts in their vicinity. Latterly I have found it more convenient and expeditious, as well as safer in these cases, to use a small wooden handle, terminated at one of its extremities by a screw, on which may be fastened at pleasure a succession of pieces of wood, of various sizes and figures, so arranged as to carry a single or double piece of coarse flannel dipped in the liquid. The end of the instrument so armed is applied to the part of the surface of the body to be acted upon, as one does with a wafer-presser to a letter. Such a contrivance is particularly suited for the temples, the forehead, the throat, the chest, and the nape of the neck; since the carrying-piece of the instrument is so fashioned and curved, that it will fit effectually the parts just enumerated.

97. The operator should place his watch on the table near at hand, and observe the time employed from the first instant of the application being made. At the expiration of the first two minutes, he should raise a portion of the compress, and inspect the skin beneath it, in order that he may regulate and secure the accomplishment of whichever effect of the lotion he has previously determined to produce—I mean rubefaction, vesication or cauterisation. This precaution, necessary in all cases and with all patients, is still more so with some of the latter whose skin is exceedingly fine, or their nerves exceedingly sensitive; and also in the case of parts of the body being acted upon, which are by nature very excitable. In this way we avoid any unnecessary prolongation of the pain produced by the lotion, as well as of its action on the skin, beyond the degree of intensity we wish and require to excite.

98. The sensations produced by the strongest ammoniated lotion during its application are, in the largest number of instances, pretty much the same in all individuals. Some of the patients, however, seem to feel the effect more than others, and can hardly support it for the requisite length of time, though that time consists of but a few minutes. Others, on the contrary, whose natural morbid state of suffering is very great, appear to consider the artificial pain produced by the counter-irritating lotion as a relief, and a few even have hailed that pain as a pleasure. Again, some individuals will experience the peculiar sensation produced by the lotion immediately upon its application; while others are a few minutes before they are sensible of any disturbance; and yet the particular effects on the skin, of rubefaction and vesication, will have been going on at the same time. It is therefore important to desire the patients, at almost every instant, to describe what they feel; and we should not be guided by the greater or lesser outward manifestation of pain exhibited by them, since there are many who would prefer suppressing all such manifestations.

99. The pain alluded to (98) lasts but a short time after the removal of the application, and may even, if necessary, be shortened, by laying over the part thick rags of linen, dipped in warm water. I have not known a single case in which the pain in question has continued longer than two or three minutes after the application of those rags; nor does it usually last much longer after the removal of the compress charged with the lotion, even if no warm water be applied to the part.

100. But the word pain is hardly correct, when employed to express the peculiar sensation which is felt by the patient who submits to the action of the strongest counter-irritating or ammoniated lotion. As I have used that preparation more than once on several parts of my own person, for the successful removal of lumbago, severe sore throat, and inflammation of the heart, I can perhaps, describe the sensation alluded to as well as any of the patients who, by their own descriptions, have since confirmed mine. The first

impression made is that of excessive coldness; presently a pricking or tingling of the part supervenes, in all respects like that which we experience in a limb that has been "asleep," when the blood returns into it. This feeling, which at first occurs only in insulated points of the part acted upon by the lotion, soon becomes more general, until it seems to occupy the whole of the surface; and then a sense of heat in the part is substituted for the first impression of cold,—which heat and tingling increase gradually and simultaneously, until they seem to become one single sensation, approaching in its nature as near as possible to that experienced when we hold the hand close to a blazing coal fire for a minute, or rather resembling the painful feeling of a severe burn produced by scalding oil or melting sealing-wax dropped on the fingers.

101. I have thus described the least as well as the worst, of the sensations occasioned by the counter-irritating or antidynous lotions, in order that patients may not be taken by surprise. I have also stated, that such sensations are exceedingly brief, and may even be cut shorter by a very simple process; and further I have remarked that, in some cases, the sensation has been described as a not unpleasant one. It now remains for me so assert, as a crowning of all this, that so soon as the pain of the lotion is felt, that instant the inward pain, for the removal of which it was applied, is suspended and at last vanishes. Indeed, during a paroxysm of tic douloureux of the face, and while the patient is under the most agonising suffering from that complaint, the immediate cessation of that suffering which follows closely upon the application of the lotion, and as soon as the counter-irritating pain is set up, borders on the miraculous.

102. If we watch the successive changes that take place in any part of the body during the application of the ammoniated lotions to it, we observe, as was before stated, a lively crimson blush of the skin in the course of the first two minutes, the cuticle remaining tight. In another instant or two more, however, the cuticle is seen corrugated here and there in exceedingly fine folds of a peculiarly white opacity. These folds occur generally in bundles, which are placed apart from each other, and leave a space between, where the cuticle is still stretched; until, in the course of two or three minutes more, it is seen to rise, sometimes in round dots like small bubbles, at other times in patches of every shape and dimension,—in all of which a pale yellowish thin fluid will be found, on close examination, to have collected. In a very few minutes more these patches and dots unite together or become confluent, and give rise, at last, to a general vesication of the skin in the part, resembling altogether that which is produced by an ordinary blister. By this time the quantity of the counter-irritant with which the compress was charged has, partly through absorption (?), partly through evaporation, become exhausted; and if any greater effect from the counter-irritant employed be wished for, the quantity must be renewed and re-applied to the same part, so as to

establish in it a downright ulcerative process, in order that we may obtain, as a desirable result, a purulent discharge from the surface. It happens very often, that these three several stages or phenomena of local and artificial counter-irritation, are produced in half the time here mentioned, by the lotions in question; but I have also known, on a few occasions, the third phenomenon, or the stage of cauterisation, not to have been produced under a shorter period of time than two or three hours.

103. From what has just been stated (102), the reader will perceive, that in its progress from rubefaction to ulceration, the lotion becomes a real blistering liquid; nor will they fail to remark also, that whereas a common blistering plaster requires some hours to produce even its first impression of tingling or of something like pain,—the counter-irritating ammoniated, or antidynous lotion, on the contrary, will raise a full blister in less than ten minutes. Experience warrants the assertion, that no other blistering application, hitherto employed in medicine, can produce a more complete, clean, or a better defined vesication than this, in which the fluid secretion from the exhaling apparatus of the true skin is very abundant. In point of quickness of effect, all other blistering applications are inferior to the counter-irritating lotion. I am aware that by means of boiling water, or a piece of metal properly heated, an effect nearly equal in extent and rapidity may be produced; but in those cases the pain is infinitely greater, and I may add much more abiding. Of late years the French have adopted another mode of raising an instantaneous blister, to which I have made allusion in a previous section, while speaking of the moxa,—for to that process it bears a close resemblance. The process, which is as follows, is, as far as I am aware, equally successful with the one I propose, in forming a rapid vesication of the cuticle; but it is, at the same time, so complicated, and attended by such intense pain, that in practice it will not bear comparison with the agency of the preparations I recommend. A piece of linen or paper being cut of the requisite size, it is immersed in spirits of wine or brandy, or even eau de Cologne or arquebusade, or camphorated spirit, whichever of them be readiest at hand. It is then laid on the part to be blistered, taking care that the moisture from the paper or linen does not wet the surrounding surface. The flame of a lighted taper is next applied quickly all over the surface, so as to produce a general ignition, which is exceedingly rapid. At the conclusion of this operation the cuticle is found detached and raised from the true skin underneath it.

104. It now remains that I should state how the part vesicated by the ammoniated lotions should afterwards be treated. And in the outset I may assert that I hold it of much importance, in all cases in which an abiding agency of counter-irritation is desirable, to preserve the skin of the blister produced intact. Fortunately, this object is readily and more easily accomplished by employing an antidynous lotion, than by any ordinary blistering plaster; for it generally happens with the latter, that adherence of the preparation

to the loosened cuticle takes place, and that on the removal of the former, portions of the latter are torn away. Not so in the case of the lotion, which gives rise to no adhesion whatever. When I have succeeded in preserving the bladder of the blister intact, I have observed that the secretion kept increasing within it for the first twenty-four hours; after which time, it began gradually, though slowly, to diminish, becoming somewhat denser and of a more intense colour, until it assumed the hue of mahogany, and the cuticle appeared pergamaneous. In this state I have known a large vesication produced by the lotion over a knee-joint attacked by severe inflammation, to continue without bursting for four or five days; thus keeping up a perpetual counter-irritation on the part through its own inherent properties, by which the local affection was removed. When the cuticle has either burst of itself, or has been broken or cut after complete vesication, I treat it with simple embrocations of warm water, and in some cases lay nothing over the part, except a loose piece of linen, to defend it from external impressions, if it be my intention to stop the further progress of vesication. But if, on the other hand, it is desirable to proceed to the last stage of the agency of counter-irritation, and a purulent discharge be required,—I bind over the denuded surface some clean cotton wadding, which is not removed for three or four days; when ulceration of the surface is generally found underneath. I seldom, if ever, allow of greasy applications to the denuded surface, except under peculiar circumstances.

Having thus brought to a close the series of popular observations on artificial counter-irritation in general, which I deemed necessary to the better comprehension and appreciation of a new mode of producing it proposed by myself; and having fully described the nature and effect of the latter, as well as the way to manage it successfully; I shall proceed to give the narrative of several important cases of the various diseases specified in Section VII., which have been treated by the counter-irritating applications under consideration, and thus demonstrate, by the successful result obtained in almost all those cases, the true value of the remedy in question.

PART SECOND.

NARRATIVE OF SUCH CASES OF DISEASE

AS HAVE BEEN TREATED, EITHER WHOLLY OR IN PART, BY MEANS OF ANTIDYNOUS OR COUNTER-IRRITATING LOTIONS;

WITH

THE EFFECTS THAT HAVE RESULTED THEREFROM.

Before I advance a single step in the career of historian or narrator of various highly interesting and attractive cases in medical practice, it is fitting that I should premise one or two general observations, respecting the ground of my choice of those which I have recorded in this part of my present publication. It cannot for a moment be supposed that I would claim my reader's attention to the entire collection of the cases which have fallen under my notice in the course of the last nine years (since I first adopted the artificial counter-irritating plan of treating certain classes of disease), and which were treated by me in accordance with that plan. Few of my readers would thank me for such a task; for if the evidence of one or two striking examples of the good effect of the plan in question be brought forward in support of it, and are found amply sufficient for that purpose,—to multiply them, by copying the entire register-book of my practice in this one point, would not only be superfluous, but inconvenient.

A selection of cases, therefore, was deemed necessary; and to that I proceeded under the following impressions:—First, that all such cases ought to be preferred, in which, either through the preliminary statement of the patient, or by a subsequent acknowledgment from himself or his friends, the nature of the disease, as well as the effect of the treatment employed, could be clearly defined. Secondly, that such of the cases to be related should be chosen, as from the peculiarity of their nature, and of the manner of their recovery, would prove the superiority of the individual counter-irritating agents employed and recommended by me, over the ordinary counter-irritants. Thirdly, and lastly, that whenever a case of disease had occurred, which, having been deemed susceptible of cure by counter-irritating lotions, had been treated accordingly, and yet had resisted that powerful remedy, as it had formerly resisted every ordinary treatment,—such a case should be equally chosen for my

narrative, in order to show what might and what might not be expected from the remedies recommended.

This then is what I have done; and I trust that the public will appreciate the motives which led me to the adoption of a system of selection intended to inspire confidence in the reader, while it may prevent the maliciously-inclined from casting the sneer of incredulity on the following statements of facts.

Nor is the last remark out of place on the present occasion; since the results obtained in many of the cases about to be related, have been so unusually striking, that without wishing to tax either the general reader, or the members of my profession, with a proneness to hold cheap medical histories in general, or to suspect their authenticity,—it may be supposed that they would hesitate to believe what is not of an every-day occurrence, unless it were brought forward in the manner I have adopted. To strengthen the line of evidence still further, I shall consider myself at liberty, whenever the usual laws of courtesy and etiquette will allow it, to allude more particularly either to the name of the patient (where permission to that effect has been obtained), or to some circumstantial detail connected with the subject of the case. But neither in this, nor in the selection of such of the details of each case as I deem to be important, shall I depart from the ordinary course of proceeding adopted by medical writers of respectability, in preserving inviolate the confidence reposed in them by their patients.

SECTION I.

CASES IN WHICH THE NERVOUS SYSTEM WAS PRINCIPALLY AFFECTED.

1. Acute Neuralgia. { Periodical / Permanent } Tic douloureaux.

Neuralgia is a comparatively modern name, applied to diseases which affect especially the nerves of the body, and are accompanied with pain. I have superadded the word *acute* to it, in order to particularise, in a more emphatic manner, all such disorders of the class in question as are more intensely painful than the rest: for it is impossible to deny the difference in respect to pain, which exists (for example) between a nervous headache, and the tic douloureux of the nerve situate in the forehead, immediately over the eye. This term of "tic douloureux," which has unfortunately become more familiar to English ears within the last quarter of a century than it had ever been before, is, in reality, no other than an expression common to the French language, and which has since become general in all languages, the meaning of which is the same as that of the more classical name of "neuralgia."

My present object is, not to enter into a professional disquisition on this or any other of the classes of disease embraced by the present and the following sections; but simply to impart as much preliminary information to my general readers, as will enable them to appreciate the importance of the cases about to be submitted to their consideration. I shall therefore only add that, adopting, for simplicity's sake, the word *tic douloureux* to denote all intensely painful affections of one or more nerves of any part of the body (although the expression was originally much more limited),—provided such affections be not accompanied by well-marked fever, or such general derangement as constitutes febrile disorders,—I distinguish among them two well-marked subdivisions. To the first belong all those cases in which the attacks of tic douloureaux are periodical, whether the returns be at regular or irregular intervals. These, generally speaking, are the most severe cases of the disease. To the second appertain those cases of tic douloureux in which the disease, or painful affection, has no well-defined or appreciable interval; and these are the milder forms of the disorder. In both classes of cases, however, it is to be borne in mind, that if the origin of the disorder lie either in a local injury done to the affected nerve, or to some of its branches; or in some organic derangement, such as increase of bone, the growth of a hard tumour, the swelling of an artery or aneurism, and other similar inward causes producing pressure on any part of the nervous system;—then there is no perfect cure to be expected from the application of the antidynous lotion, or from any other counter-irritant, be it ammoniated, or not; or indeed from any external remedy whatever; but only a relief from pain, and that not in any considerable degree.

CASE I.

Periodical and Erratic Tic douloureaux.

At the head of the cases intended to illustrate the diseases of the present section, must stand that of a patient who will be recollected by many of the leading members of the medical profession in London, as having applied to them all in succession for relief, without obtaining it, and as having at last died in a state of the most intense atrophy, the result of protracted dyspepsia, arising from organic mischief. I was the last medical man he consulted, with the exception of Sir H. Halford, who, at my suggestion, was called in consultation, on the propriety of allowing the patient to continue the free and increasing use of Battley's Sedative Drops. On that occasion that distinguished physician suggested the addition of very minute doses of tartarised antimony to the opiate; a combination which had the happy effect of somewhat tranquillising the bodily pains of the patient, by means of weaker doses of the sedative. At that time, however, no attempt of a direct kind had been made to stay the attacks of pain, the peculiar nature of which was so striking, that Sir Henry, at the consultation alluded to, was

pleased to prolong his visit beyond the usual period, for the purpose of watching with myself the curious and anomalous workings of the malady.

It was some time after that consultation, when every thing seemed to fail us, that, being accidentally present during one of the most agonising attacks of nerves I had ever witnessed,—attacks of which I had not formed any thing like a correct conception before, notwithstanding the clear and precise manner in which the patient had endeavoured to describe them to me,—the thought struck me that the setting up of an instantaneous source of counter-irritation on the very part which seemed to be the seat of the attack, might, perchance, afford relief. The complaint consisted evidently in a highly painful neuralgic affection of a periodical character; but whether connected or not with the general malady of the stomach and mesentery, which had prevailed for several years simultaneously, no one could tell. The periodicity of the attack was to a degree capricious, and so was the selection of the part on which the disease seemed to vent its rage. Still as all the parts were accessible to the application of an energetic counter-irritant, I proposed and employed one which completely answered our expectation.

Such a case, therefore, forms very properly the first link of the chain of evidence I am about to lay before the public, in support of what I have announced in the title-page, and afterwards developed in the First Part of my present volume. Such, in fact, is the beginning of that extended range of experience in the use of external medicated applications, which I have had now for a period of nine years; and as such, therefore, I place it at the head of my medical narrative.

To add to the interest of the case, I shall introduce it in the words of the patient himself, contained in a letter addressed to me, with a statement of his sufferings, and in a second letter written about four weeks after the success of the first external application, and directed to a very intimate friend of his—a partner in one of the principal banking-houses at the west end of the town. It is proper also to state in this place, that the patient, thankful for the unexpected benefit he had derived from the treatment, had meditated publishing his case in the daily papers, and was only restrained from so doing, by my requesting him to suppress the letter he had prepared on the subject for the editor of one of the leading journals.

"*Euston-square, January*, 30, 1830.

"My dear Sir,—With all my desire to meet your wish that I should endeavour to put down in writing the peculiar features and character of my case and suffering, as they existed before I (happily I must say) was induced, at the recommendation of our worthy friend Mr. D——, to consult you,—I experience great difficulty in doing it. I cannot, therefore, better relieve myself of the duty than by enclosing you an extract of the statement submitted to the professional gentleman whose advice I last requested, in the faint

hope of benefit; which proving as abortive as all my former applications, had determined me never again to increase my anxieties by any further resort to the faculty. The very great relief, however, which I have already experienced from your treatment, affords me at least the gratifying expectation that I may pass my future days with, if not an entire removal, at least a very considerable release, from the consequence of my apparent constitutional tendency to the affliction I have so imperfectly described.

"You will remember the day you accidentally saw me during the paroxysm of one of my severest visitations, when you acknowledged, that although I had at different times expressed to you how extremely I was often affected, you had until that moment formed an imperfect idea of the extent of my sufferings. Since that period (18th December, 1829) I have diaried the daily result of your attention to my situation, as it was the first time during the greatest proportion of my life passed in the endurance of hourly sufferings, that I have met with such relief as I have now obtained from the means you almost instantaneously suggested. I recall this to your remembrance, because since I saw you, having been asked by a friend, who knows all my former disappointments, on what ground I form my present strong expectation, I have had occasion to refer to my register; from which I collect, that in the forty-four days that have elapsed since the 18th of last month, notwithstanding the unusual severity of the weather (even in this country), and the great vicissitude in the barometer and thermometer, I have passed *seventeen* days *without any pain whatever*, twenty-six with very mitigated and partial affection, and only one night with any recurrence of the acute distress I was wont to know so constantly. During the whole of this period I have uniformly been able to lessen almost immediately, and shortly after to subdue the pain so much, that I have at times absolutely doubted the reality of my experience.

"I am, &c., very faithfully yours,

"Alexander Riley.

"*Dr. Granville.*"

The extract referred to in the preceding letter is taken from a full statement of Mr. Riley's case, which that gentleman had submitted to Dr. Armstrong a few months before the death of that eminent physician, and sometime before I was consulted, and is as follows. The words marked by italics are so found in the MS., and the same remark applies to those so marked in the preceding letter.

EXTRACT.

"My peculiar case appears to be one of almost exclusive distress, arising from such constant recurrence of pain in every part of my person, that I know not when or where I am free from suffering. My shoulders, the entire of each side, arms, back, hips, sciatic nerves, all parts of the thighs, knees, legs, ankles, and feet, are

equally visited. I go to bed or rise apparently in my usual proportion of health and spirits, when, suddenly (and as generally in the night as in the day) I am attacked with pain, alternating in throbs, varying in degree of acuteness and in duration from one to twenty-four hours, and more particularly under every and the most trifling changes in the state of the atmosphere. Sometimes I am only affected in one place, but not unfrequently in four, five, and more places at the same time, *and often with such extreme intensity that I cannot well describe my experience*, except that it then appears to resemble the agony of those afflicted with the malady termed *tic douloureux!*

"With more or less of these painful visitations of endless variety, I have passed the last twenty-two years, never knowing one moment beyond another when the morbid action will recur, and to which no caution, or mode of living, or change of residence in town or country, has hitherto rendered me less liable. I have never yet been able to meet with the last effectual remedy for my sufferings, although, since my return to Europe in 1818, I have consulted many of the faculty, and perseveringly resorted to all prescribed means, but without experiencing any benefit whatever.

"A. R."

The second letter from this patient, to which I have alluded in my introductory remarks, was addressed to W. D——, Esq., a very old friend and an almost constant visiter. After entering into some particulars respecting private affairs, the writer proceeds thus, under date of the 16th of January, 1830.

"I fear this sad weather does not agree with you any more than myself, although I thank God to be enabled to say, that under the instrumentality of Dr. Granville (and I must never forget that *to you alone* I am indebted for having first resorted to his valuable services), I have experienced such an immunity from those severe tormentings which have so long and so deeply harassed me, that during, I believe I may say almost during TWENTY-FOUR long years, I have never passed a month so little afflicted with pain (notwithstanding the severity, and to me particularly trying state of the season), as since the 18th of December, on which day he accidentally came into my room during the intensity of one of my violent irritations, of the extremity of which he had, until that moment, formed an imperfect idea. He evidently felt for me, was silent a few minutes, and then, as if by inspiration, suddenly proposed a system from which I appear to have absolutely received almost magical effect:—so much, indeed, has been the change in my favour, that I can at times with difficulty suffer myself to believe it otherwise than a dream.

"Dr. Granville, and I must add, not less kindly, yet attends the variations and progress of my most peculiar case, and at present I entertain the cheering hope of continuing, under the blessings of PROVIDENCE, to enjoy, I dare not say entire, but permanently

most considerable relief from his skilful treatment—a relief which *not in the slightest degree* have I ever been able to obtain from any other of the many of the FACULTY (and those too of the highest eminence) whom I have hitherto consulted in the vain expectation of benefit.

Yours, my dear Sir, most faithfully,

"ALEX. RILEY."

This patient, who was about fifty years of age when he first consulted me, had served in a public capacity in Van Diemen's Land, where, during an inland excursion, he was speared by a horde of the natives, and left for dead on the spot, with a sergeant and one or two other individuals of the party. He, however, recovered so far as to be able to crawl to the bank of the river, where his boat had been waiting for him, and returned in safety to the colony. The wound inflicted was not deep: it was situated a little above the right hip, rather towards the spine, and healed in a very short time. The attacks he has so forcibly described in his statement to Dr. Armstrong, began soon after, and the reader will have seen that they had lasted for nearly four-and-twenty years without intermission, when he consulted me. Although almost every part of the body was at times affected, especially during the prevalence of any unusually severe weather, and above all immediately previous to any great change in the weather, the spot which had received the wound was always the most painful, and seldom escaped a single day without becoming the seat of considerable agony.

During the paroxysms, experience had taught Mr. Riley that the quickest mode of dispersing the pain was to clothe the part with flannel bandages, and apply them as tight as he could bear. This process diminished the duration of the pain. He had all sorts of contrivances at hand, both by day and by night, for that purpose; and I have been present on more than one occasion previous to my thinking of the external application which afforded him such instantaneous relief, when he would be attacked in several places, one after the other, and as quickly as possible, in the thighs, legs, and arms, all of which he as quickly bandaged, over his garments, giving to the limbs a most curious appearance. How human existence could have endured under such incessant irritation, it is not easy to determine. That it had slowly undermined his constitution, and induced a state of the most complicated symptoms of dyspepsia, followed by an extensive atrophy of the whole body, there is every reason to believe; and this state of morbid action of the stomach in fact was the very one which had led him, from time to time, to consult so many medical practitioners, and which had induced him, in the first instance, to claim my professional services. As to the pains he suffered, he had, as he himself expresses it, acquired such a conviction that art could do him no good, from the repeated failures of the attempts made to cure him, that he never once even asked me, when I first attended him, whether any

thing could be done to shorten his sufferings, beyond what he had himself adopted—namely, pressure, and the moderate use of narcotics.

Mr. Riley continued free from pain until July, 1830, in which month he called on me, whom he had not seen for three months, to inform me that on the 14th a very acute paroxysm of pain, like the attacks of old, had seized the spot where he had been wounded; but that the suffering was immediately relieved by the same external application.

The conclusion of this interesting case was such as might have been predicated. At first, the cessation of the usual daily sufferings permitted the patient to devote more of his attention to his stomach; and by dint of diet and exercise, he so far recovered in that respect as to enjoy, during the rest of that year, and the two years following, a comparatively good state of health; although his emaciated appearance would not have denoted it. During the whole of that period he attended to his daily city occupations, to which he used to proceed either on foot or by a public conveyance; and he had no occasion to consult any medical man, except that he called on me once or twice, to repeat how thankful he was for the very mitigated state of his sufferings, and his improved digestion. He lived by rule, and committed no excesses. Still his emaciation continued until the year 1833, when he had become almost a walking skeleton. At length, early in November of that year, nearly four years from the period of his receiving the first benefit of the counter-irritative plan of treatment, I found him, upon being sent for, sinking under the most complete atrophy I have ever witnessed, attended with aphthous ulcerations of the mouth, and of the whole of the gastric and intestinal canal, as evinced by many infallible symptoms. He soon sank, and expired on the 17th of the same month, in my presence, without even the movement of a muscle. There seems no doubt that had the suspension of the intense nervous suffering, which he had obtained through the external ammoniated counter-irritant, and enjoyed for a period of four years, been afforded him twenty years before, his life might have been spared to a more advanced age.

CASE II.

Permanent Tic douloureaux of the Cheek, Ear, and Throat.

Mrs. P——, a young married lady, had been afflicted for upwards of three months, at the period of my seeing her on the 19th of March, 1830, a little way out of town, with constant neuralgic pain of the lower half of the left cheek, at times exceedingly acute, and generally shooting into the ear, or down the muscles of the neck on the same side. The patient was moreover labouring under a manifest disease of the heart, which induced me to inform her, that I feared the system of counter-irritation would not succeed in affording her permanent benefit. She however insisted on trying

the external application, as she felt very desirous to procure some relief from the constant pain she was suffering, and which no internal remedy hitherto employed had in the least diminished. An ammoniated lotion, diluted with one third of its bulk of water, was applied to the left side of the neck, immediately under the jaw, and the application timed by a watch. In five minutes she complained of great heat and cutting in the part. The skin was then quite red. In five minutes more the counter-irritation set up had much increased, but the inward pain had become in proportion more bearable, until it disappeared at last altogether, before the expiration of a quarter of an hour. As the strength of the lotion had been reduced, no blister followed its application.

CASE III.

Permanent Tic douloureaux of the Face.

In May, 1832, Mrs. Usherwood, a person residing in Brown-street, Duke-street, Grosvenor-square, applied for advice on account of her mother, who for a considerable length of time had suffered great tortures, from intense pain in the nerves of the upper part of the face, temple, and orbit of the eye of the right side. An ammoniated lotion of moderate strength was applied in the usual manner to the temple, care having been taken to cover the eye with a towel. A blister was raised in six minutes, which relieved the pain as quickly, and healed without any other application than that of rags dipped in warm water. The neuralgic pain never afterwards returned.

CASE IV.

Tic douloureux of the Chin, alternating with general numbness of the part.

The Right Hon. the Countess of ———, whom I had often attended on former occasions during ordinary attacks of disease, requested my advice for a singular affection of the chin, under which she had been labouring for some time. This lady had formerly been, and still was, occasionally subject to very severe headaches of a nervous character, which confined her to a dark room for two or three days. On the 14th of July, 1832, her ladyship informed me that, for many days, her chin, including the under lip, had been attacked at irregular periods, by day as well as by night, with the severest pain in one or two spots,—which was scarcely bearable,—and that, between the intervals, every part of the chin not only felt numbed and insensible, but was actually so, even when pressed or pinched. As the attacks of positive pain were very frequent, an opportunity was soon afforded me of witnessing one of them. The ammoniated lotion,—with the efficacy of which her ladyship was acquainted, from having witnessed the good effect of it on her sister-in-law, whose case will be related further on,—being proposed to her and assented to, was applied on that part of the chin which corresponds with the opening through

which the mandibulo-labralis branch of the fifth nerve comes out from the bone to the muscles and integuments. The result was an instantaneous removal of the pain, and a return of the natural sensibility of the part. The application produced vesication, not in a general mass, but in distinct little dots, where it was curious to observe the epidermis rising up, followed by a minute drop of fluid which filled it; and this took place during the space of some minutes after the lotion had been removed. In about a week the pain seemed disposed to re-appear, a leech applied to the gum prevented its return.

CASE V.

Tic douloureux of the Upper Lip.

Mrs. L——d, aged 30 years, for many years subject to an occasional tremulous motion of the upper lip, accompanied by acute pain, which generally lasted three or four minutes, applied to me at the morning consultation of the 13th of April, 1835, for advice. She could not assign any reason for the complaint. Her health appeared good, and her medical attendant had long ceased to prescribe for her, as he could not discover any other complaint requiring medical aid, except the *tic* in her lip, which he acknowledged he could not cure. I proposed to apply at once an ammoniated lotion to the trunk of the portio dura of the seventh nerve (explaining to her the meaning of those terms) by the side of the cheek, towards the ear; to which proposal she assented. The lotion was retained on the part for nearly four minutes, and was removed in consequence of the severe burning pain the patient experienced from it. The application of a wet rag stopped this pain in the course of a very short time, when it was found that neither the tremulous motion nor the painful affection of the lip remained. I learned sometime afterwards that the disease had not returned.

CASE VI.

Tic douloureux of the left side of the Head and Face.

A young lady of Southampton, remarkable for her general appearance of perfect health and personal attractions, lately married, was placed under my care nearly ten years ago, while labouring under a chronic disorder of the abdomen, accompanied by excruciating pain, the result of severe inflammation of the peritoneum, that had lasted several months, from which she had ultimately though with difficulty recovered. A few years afterwards she was seized with acute pains in the left temple, extending upwards and downwards, shooting into the eye, and spreading to the back of the head. During the paroxysms I have seen the two eyelids of that side drawn forcibly towards the temple, and brought nearly in contact; the eyebrow at the same time descending, while the skin of the cheek seemed pulled up towards the eye. These

paroxysms would continue several minutes; flashes of light shot through the eye, and the globe of it was exquisitely tender to the touch. The frequency of the attacks, and the length of time they had lasted, when I first saw the patient for the present complaint, had produced a visible diminution of size in the oval of the orbit, and a perpetual morbid tenderness of the scalp. She wished to try the effect of some external application, to stop the pain, and keep it under control; as she had failed in obtaining any relief from internal medicines, and scarcely expected to be cured. On the very first opportunity I applied a compress, with an ammoniated counter-irritating lotion; pressing it steadily on the left temple. In two minutes all contraction had ceased, and the pain was gone. That day it never returned. On the following day, however, it again invaded the part, and again it was suddenly stopped by the same application. No blister was raised on those occasions. In this manner the really painful part of the complaint was mastered and kept in check; and surely such a truce from bodily suffering (never obtained before) was worth obtaining, and deserved the warm acknowledgments of thankfulness it received from the patient. After a continued treatment of some weeks, the young lady had a long interval of cessation of the disorder. It returned in the following year, but was again mastered; and although from time to time ever since (but in successively diminishing degrees), the patient has been made sensible of her former complaint,—her general health, even in that respect, has been so much improved, that she does not look upon herself as in any way requiring medical aid.

CASES OF A MORE REGULAR FORM OF TIC DOULOUREUX OF THE FACE.

I wish now to put on record the failure of the antidynous lotion, and of every other counter-irritant, ammoniated or otherwise, that had been tried before, in affording permanent relief, and accomplishing a perfect recovery, in three instances of genuine and chronic tic douloureux, that fell under my notice.

The one case was that of Mrs. B——, a lady advanced in years, recommended to me by the Rev. Dr. Stoddart, Rector of Brentford, in May, 1835. The second case was that of a young lady, recommended by Mr. Workman, surgeon at Reading; and the third is that of a gentleman, whose medical history, as written down at full length by himself, is full of interest and instruction.

I distinctly point to these three cases, because in each of them I find the correctness of my observation proved,—namely, that wherever the painful affection of the nerves called tic douloureux is the acknowledged or known product of local injury or organic derangement, no permanent relief, no radical cure, can be hoped for from counter-irritation. Relief, sometimes considerable and immediate, may indeed be afforded, and was afforded in each of

the following cases by the ammoniated counter-irritants; but such a relief is of a purely temporary nature, and requires to be obtained over and over again, by a repetition of the application. I now proceed to detail the cases in question.

CASE VII.

Mrs. B——, residing at Brentford, a lady past the *meridian* of life, had from *that period* of her existence up to the time of consulting me (six years) suffered under the most agonising pain in the right side of her head, which was attributed to constitutional causes. The pain occupied the whole of the parietal region, the temple, and portion of the forehead on the right side;—it descended over the eye down to the cheek; and while the paroxysm prevailed, these parts not only felt but looked puckered up and contracted, so as to exhibit a most pitiful spectacle to the beholder. Such attacks as these would come on many times during the day, and the nights were often passed with equal suffering, and were generally sleepless. From the statement of her husband, who accompanied the patient to my house, and from the subsequent corroboration of it given me by her daughter, this miserable victim of the most aggravated form of tic douloureux had derived no benefit or alleviation whatever, not even temporary, from the various treatments and remedies to which she had been subjected. Her general health had at times given signs of being seriously affected by the complaint, and the emaciation was considerable, although her person was of large dimensions. On one occasion only was Mrs. B—— relieved, and remained for more than a fortnight afterwards quite free from pain. Being in her chamber one night, bearing with resignation her never-ending tortures, and confined by an unusual degree of debility, she saw through a window the glare of flames, rising from a portion of her own house towards the back of the building, and at the same time the cries of fire and alarm reached her ears. Impelled by the natural love of life, and the desire to escape danger, she found strength enough to hurry from her bedchamber, half clad, down the stairs into the open air, and thus made her escape to a neighbour's house. From the first instant of the alarm, the nervous pain in the head and face ceased, nor did it return for a period of two weeks. The patient's friends seemed inclined to ascribe the return of the complaint to some imprudence on her part. Be that as it may, the sufferings soon became as severe as ever, and the hope of relief as desperate. In this state I first saw her (6th May, 1835); and during my first visit I witnessed one of the attacks which I have endeavoured to describe. This was a case which at once bespoke the little chance of cure it afforded, and I signified the same to the parties, offering, however, to adopt the plan of counter-irritation, as a means of giving momentary relief. The offer being accepted, the patient removed to town for a few days, during which I applied the coun-

ter-irritating lotion several times, and always with the same result, namely, the arresting of the pain in a few minutes, and prolonging the interval between the paroxysms. At the termination of the period for remaining in London, the patient returned to her home, where she continued for a longer period the use of the counter-irritant, with the same momentary beneficial result; but without effecting a cure, as was indeed apprehended from the commencement of the treatment.

CASE VIII.

The second example of partial relief only from acute nervous pain, obtained by means of counter-irritation, is that of Miss A. H——, aged about twenty-two years, respecting whom I received a letter of consultation in April, 1837. This lady had been seized some time before, on going to bed, with pain in the right side of the face, which continued to attack her every night about eleven o'clock, following generally the direction of the *pes anserinus*.[1] The pain darted from the ear, across the cheek, to the upper and lower jaw, to the roof of the mouth, and down the neck. When the attack was very severe, she experienced a tenderness over the scalp on the same side. Sometimes the pain would centre in the ear. It generally went off in an hour or two, and she used to feel very little of it during the day. Her general health was very good. The mother's subsequent statement of the case differed so far from the preceding one, that she described paroxysms of pain during the day, and mentioned as the origin of the complaint, a nervous illness which her daughter had had two years before, and which had left very considerable debility of the nerves of the head and back. She suffered also very often from nervous headache, and enjoyed tolerable health only when kept perfectly quiet.

In this instance I deemed it necessary to prescribe a little preliminary medicine, after which I recommended the application of a counter-irritating lotion. Of the result of the latter I was informed on the 19th of April, by the mother, in the following words:—"The pain of the tic was not violent but teasing, and had been so during four hours. The lotion produced the effect described by Doctor Granville, in stopping the pain of the tic *immediately;* but a short time after removing the compress, the pain returned more violently, and continued for ten or twelve minutes, after which she was free the remainder of the day, and at night she slept well. On the following day the tic was slight from 8 A. M. till 12, when the pain rather increased, and the lotion was again applied with similar results." In reply to this first report, taking into consideration the additional information afforded me by the mother, and the previous nervous affection of the head, I was induced to recommend the

[1] The *duck's web-foot*, a peculiar ramification of nerves in the side of the face.

close examination of the back teeth of both jaws on that side of the face, and if none were decayed so as to account for the tic, then to apply the counter-irritating lotion on the spine, and on different parts of it, from the loins upwards to the nape of the neck, day by day, an hour before the expected paroxysm. This system I had known to have proved completely successful, in two other nearly analogous cases of nervous pain. Whether it was followed up in this instance or not, I cannot tell, as I never received any further information on the subject; and this is pretty generally the case when a country patient consults a metropolitan physician by letter. The treatment recommended by them is either irregularly or imperfectly followed up, and a perseverance in it not being insisted upon by those present, no proper result can be expected. I feel a moral conviction that, had my plan of acting on the nervous column of the spine, from its lower extremity upwards, by counter-irritating agents, been carried into effect with precision and regularity, the patient would have recovered.

CASE IX.

The last example of tic douloureux in which counter-irritation afforded only momentary and very partial relief, was one which in my opinion originated in an injury done to the superorbital nerve of the right eye, by the repeated introduction of needles into the eyebrow, with a view to restore, or rather to invigorate, the sight of the right eye, agreeably to the views of a fashionable and popular oculist in Paris. The character of the disease is forcibly described by the patient, a gentleman well known in the higher circles, from his personal merits and connections. In October, 1837, he thus addressed me from Lincolnshire:—"I have been a sufferer for six years from tic douloureux. During the first three years I had intervals of freedom from pain of three or four months; but in the last three years I may say I have scarcely been a day totally free from it. Some days, indeed, it has been scarcely perceptible; but at others, and for days and weeks together, I have suffered the most violent spasms on the right side of my face, with cutting and burning pains, like flashes of lightning, through the face, from my temple through the right eye, under it, and downwards by the side of the nose to the upper lip, the upper gums and teeth, and occasionally in the lower jaw, teeth, and tongue. From each and all of these I have now been suffering most acutely for upwards of a week, night and day, setting sleep at defiance, and disabling me from eating or even speaking without torture. Between the spasms I am totally free from pain; but, alas! those intervals are very short: from two to ten minutes and no more. My age is thirty-four, and in every other respect I am as strong and healthy as any man need wish to be. I live most temperately, and never commit excesses. The first attack of tic I ever had, succeeded a long and severe rheumatic fever, which had confined

me to my bed for six weeks. The first symptom of the *tic* was a slight pricking in one of my teeth, which, on the pain increasing, I had taken out; a fate shared afterwards by another, though uselessly. Most medical men whom I have consulted, both in England and Germany, have called it *gout;* and latterly I have been trying to bring on a fit of that disease in my feet, by using strong mustard-baths, of which I have taken fifty-three without producing the desired effect. Medicine in abundance I have taken, including carbonate of iron and quinine; and externally I have used belladonna, veratria, acetate of morphia, and other ointments without end, and without success," &c. &c.—I hope to be excused if I quote part of my reply to the preceding letter, as it may and will explain some of the cases already described, and others to be related hereafter, in a clear and familiar manner, and also because the ultimate result of my treatment was such as I had led the patient to expect. And I may add that I am thus minute in recording the present, as well as the two preceding cases, of comparative failure in the treatment of disease by counter-irritation, from a desire to state the whole truth; as truth, whether favourable or not to our preconceived conclusions, is always instructive. The part of the reply in question ran as follows:—"Of all the various forms under which neuralgic affections of a local character, accompanied by acute suffering, present themselves to our attention, that which you have described so minutely from the unfortunate experience you have had in your own case, is the most frequent; and I scarcely exaggerate when I state that of all the purely nervous complaints I have treated for the last twenty years, the facial TIC has occurred at least once in every six or seven cases in my practice. You are probably aware,—for long suffering makes people inquisitive as to the seat of their ailments,—that the seat of the pain you suffer is that exquisite network of nerves, called (because it resembles it) the duck's webbed foot (*pes anserinus* of Case VIII.), the various filaments of which supply sensitiveness to the temples, the eyelids, the side of the nose, the lips, particularly the upper lip, the gums, teeth, &c. These, by a direct communication with the branches of another nerve, equally with themselves deriving origin from the brain, hold intimate communion with that centre of animal life and feeling which bears the name of the great sympathetic, whereby they become connected with almost all the animal functions of the body, particularly those of the heart, liver, stomach and intestines. This simple outline at once shows how the painful affection of one part of this arrangement may propagate itself to any or every other part, and leaves the only other question in this matter doubtful, namely, at which part, or on which point of the arrangement, does the painful affection begin, and what produces it. Clear as your description is, it does not enable me distinctly to make that point out. I have to state, that in all cases of tic such as yours, when they are recent, I have found immediate recovery to follow the use of proper counter-

irritating external applications, which I have used with success since 1829. But when the case has been suffered to run on for a period of *six* years unmitigated, then I do not expect from counter-irritants more than a mere alleviation from pain," &c. &c.—In order to bring this interesting case to a conclusion, I shall briefly state that the patient came to town; that I discovered on examination of the affected part, and close enquiry, that the origin of the disease was to be ascribed to a positive local injury done to some filament of the superorbital nerve; that I told the patient so, declaring at the same time that nothing but the destruction of the sensibility of that nerve afforded the hope of a cure, which it would be in vain to expect from *any* general treatment; and lastly, that I repeated to him the previous observation I had made in my letter, of a mere temporary though immediate relief from pain being likely to result from an ammoniated counter-irritating application. That application, however, having been resorted to the moment the paroxysm came on, the pain was instantaneously stopped. At each repetition of the attack, and of the application, the same result followed. But as the attacks were very frequent, and the counter-irritant produced at last a blistering of the skin owing to its repeated applications; while on the other hand I had candidly declared that nothing but a very prolonged use of that counter-irritant afforded a chance of recovery; the patient got naturally discouraged in three or four days; again consulted his ordinary apothecary for some internal remedy, which, like all the previous ones, proved nugatory; and at last he proceeded to consult an eminent and popular practitioner at Leamington,—who, I will venture to predict, notwithstanding the high opinion I entertain of his skill, will not cure the case in question.[1]

2. INTERMITTINT HEMICRANIA, OR BROW AGUE.

I shall borrow from the lectures of a very industrious as well as ingenious physiologist and brother practitioner, Dr. Marshall Hall, a brief summary of this disease:—"The ague pain, called the brow ague, occupies the brow, the temple, the forehead, the back of the head, &c.; it occurs in paroxysms, frequently of considerable regularity. It is often excruciating, occasionally inducing delirium, and still more frequently redness in the conjunctiva. It my recur once or twice in the day; is apt to return in the spring and autumn, from exposure to the northeast wind; prevails in damp or marshy districts, and is frequently observed to accompany the epidemic influenza. This pain is almost certainly removed by quinine or arsenic." In all this, with the exception of the concluding sentiment, I fully coincide. Quinine or arsenic, which cures intermittent fever, too often fails to cure the nervous pain of

[1] I have since met the patient accidentally in the street, and regretted to observe that he was suffering still under his dreadful malady.

the brow by which it is accompanied. When that especial affection of the nerve is not clearly connected with the marshy intermittent fever, neither quinine nor arsenic will make an impression on it; as will be seen in the two following distinct cases among many others.

CASE X.

Brow ague of the superorbit of the right Eye.

Count de ———, secretary to one of the foreign missions in London, and since promoted to the rank of minister plenipotentiary, had been suffering for several weeks under daily and severe visitations of superorbital neuralgic pain, which invariably came on at eight o'clock in the morning, and generally lasted till noon. In hopes of being released from so troublesome a complaint, the count had had recourse to almost every species of treatment that had been recommended to him, and in default of all benefit derived from the suggestions of the regular London practitioners, he had applied to a well-known surgeon at Bromley, who had treated him with large doses of bark, but without success. Again disappointed in his expectations, the patient at last betook himself to the consulting-room of the late Mr. St. John Long, which he assiduously frequented, without, however, obtaining the smallest particle of benefit from that individual's peculiar mode of treatment. About this time the count heard of one or two cases of tic and spasmodic nervous pains which I had cured, by means of the ammoniated counter-irritating lotion, and he was in consequence induced to request my advice upon his case, respecting which he supplied me with all the preceding particulars. On Tuesday, the 20th of July, 1830, I attended him at his lodgings in South Audley street, before eight, A. M., the hour of the expected attack of brow tic. I had not long to wait before it afforded me an opportunity of witnessing its sudden inroad, and the frightful contractions as well as quiverings it produced, in the parts affected. A compress with the lotion was instantly applied to the brow, and kept hard pressed in its place for five minutes (care having been taken previously to protect the eye). The spasmodic contractions were almost immediately suspended, and soon relaxed. At the expiration of two minutes the pain was completely gone, and at the end of three minutes more a prominent blister was raised, which discharged a great quantity of serum,—scalding the part as it trickled down the side of the face. The blistered surface healed, in three days, without any trouble, and the complaint never afterwards re-appeared.

CASE XI.

Brow ague of the orbit of the left Eye.

Lady Caroline ———, a young and unmarried daughter of the Earl of ——, was, during the unavoidable absence of her regular

medical adviser, an eminent physician, who was then attending the sick bed of his own wife, placed under my care in April, 1836. She was apparently labouring under some accidental catarrhal complaint, of an acute character, accompanied by severe cough, soreness of the throat, and fever. In addition to this indisposition another had supervened, in the shape of an acute pain, which was almost permanent, extending from one end of the left eyebrow to the other, contracting it, and occasionally shooting into the eye and down the left side of the nose. The remedies she was taking, and which appeared most judiciously prescribed, had relieved her symptoms of the pectoral disease, but had done nothing towards diminishing the superorbital pain, which was at times said to be intolerable. Finding no reason to alter the medicines she was taking for the general complaint, I simply confined my advice to the use of a counter-irritating lotion, placed on the forehead or the temple, for the neuralgic pain. The application was made by myself, as I seldom trust the first operation of the remedy to the patient himself or his attendants. Before I left the house the pain was gone. I saw her ladyship two days after, and she had had no positive return of the pain, although at times she had been threatened with it. But the use of the same external application diluted with water, had prevented the full development of the pain. Whether it ever came back again I have no means of ascertaining, as the patient soon after returned under the care of her own regular medical attendant, for a continuance of the treatment of her more general indisposition.

3.—OBSCURE NERVOUS PAINS.

We assume that the organs of sensibility are the seat of pain. Wherever, therefore, the latter is present, no matter in what part of the body, it is usual to conclude that a nerve is somehow or other affected. In general, such affections are so well marked, and so characterised, that (as we have already seen and shall again see, in the present work) we can distinguish them by particular names significative of their origin, their cause, their individual situation, or all of these together. But there are pains (still of the nervous kind) which do not lend themselves to any known classification, and to which, therefore, it is next to impossible to assign any particular denomination. They are in fact obscure in every way; obscure in their situation; obscure in the individual nerve they may reside in; obscure in their origin; still more obscure in their connection with other organs, and in their influence on the general or particular functions of the body. Almost every practitioner has met with such nondescript pains in the course of his experience, if it has been large; and the best writers on the nervous system and its disorders, Bell, Swan, Louis, Ollivier, and others, have not only noticed them, but decided on considering them as "obscure nervous pains." I cannot follow better guides than those eminent men, in

adopting such a denomination; especially as I fully coincide in their views on the subject.

CASE XII.

Obscure pains in the muscles of the back of the neck, suddenly shifting to the side and front of the abdomen.

Mrs. De La C——e, while nursing her seventh child two months after her confinement, was suddenly seised, on the night of the 13th of May, 1830, with a most excruciating pain in the nape of the neck, which seemed to draw the head backwards, and retain it in that position. The suffering was so acute that it brought large drops of cold perspiration on the forehead. The child was removed from the breast and the pain appeared to subside, but it again became exasperated on the child's resuming its former position, and lasted the whole night. Being sent for very early the next morning, and finding, upon examination, no reason whatever for suspecting any sudden and serious disorder of the head, the pulse being moreover calm and good, I felt disposed to consider this painful affection as one purely nervous. I forthwith applied to the seat of pain an ammoniated counter-irritating lotion, which the patient had always in readiness in the house, as she had found it particularly useful in stopping ordinary nervous headaches, to which she was subject. The first application cured the pain in three minutes, and left the part entirely free from suffering. On the succeeding night, however, an attack of pain, as severe and intense as the one of the preceding day, came on in the back, also in the left side of the abdomen, and partly in front of the latter. Again I was summoned to determine as to the propriety of using the lotion once more, in doing which I was nothing loth, being now fully aware of the character of the complaint. On this occasion I found the pulse to be full and quick. The heat and pain which followed the application of the lotion occurred in less than one minute, while the external pain as instantaneously passed away; the pulse coming down at the same time to nearly its natural standard. There was a large blister formed on the side in about three quarters of an hour, and the painful affection never after returned.

CASE XIII.

Acute pain, assuming the character of inflammation in the instep, mistaken for gout.

On the 26th of June, 1832, being in attendance on the young son of Lord F—— L—— G——, his lordship, after the visit, requested my attention and advice respecting a singular affection of the instep, under which he was then labouring, and from which he had, on three former occasions, suffered to a very great extent, and for several days. The complaint, at the first onset, had been treated as gout; then as a mere local inflammatory affection of the part;

again, as a sympathetic disorder dependent on the stomach; and lastly, once more as gout,—that being the more general impression. The treatment had varied as much as the opinions had; and it was only after a very long season of excruciating sufferings, followed by many weeks of crutch-exercise, that his lordship had recovered the use of his feet. On the present occasion, the disorder had only just began its inroad on the same part, but it already threatened to be fully as painful, and was as much inclined to inflammatory action, as before. The patient could scarcely stand upright without pain, and walked as a lame man walks. With the pain, there was a sensation of stiffness also, produced, I presume, by the swelling of the part; and the surface was partially red. The general health was evidently not good; but whether that arose from the great bodily suffering, or from the several remedies, principally mercurial, which the patient had been taking, I had no time to enquire. The circumstance itself, however, induced me to prescribe such internal remedies as I deemed calculated to restore health; while at the same time I prevailed on the patient to allow me to apply a thick compress over the affected part, with an ammoniated counter-irritating lotion. In a few minutes the pain subsided, but did not completely disappear; in consequence of which I recommended that the instep should be bandaged tight with the compress upon it, and that the latter should be maintained in its place till after his lordship's arrival at O——, whither he was proceeding with his family that same afternoon. A doubt existed in my mind as to the complaint being genuine gout, and I felt rather inclined to view it as one of those obscure and anomalous nervous pains, which may occur at times in almost any part of the body. Hence my recommendation of the instantaneous counter-irritant. For some days I was kept in ignorance of the effect of that recommendation; but on the 6th of July I received from O—— a letter, of which the following is a copy.

"Sir,—I had fully intended to make you acquainted with the result of your treatment of my complaint in the instep, but had put off doing so till your last communication with Lady F—— reminded me of the omission. The treatment was completely successful. It is at least certain that the sensations of pain, stiffness, &c., gave me reason to expect as long and severe an infliction of the malady as any of the three former attacks, and that within twenty-four hours (*instead of ten days*) of the local application recommended by you being used, with the internal medicines, the disorder departed. I found by the time I arrived at O——, that the lotion had raised several small blisters. The next day the pain appeared to have shifted a little lower down, when I applied the lotion to the place without producing a blister, and within two or three days I had nothing left but the weakness incident to the former swelling, and which is now quite removed, or at least imperceptible on any ordinary use or motion of the joint.

"I cannot hesitate to ascribe the comparative quickness of my recovery to the use of the local application, as, although the advance of the disorder had been less rapid than on former occasions, and the seat of it less extended, the pain for a time had been quite as acute and indicative of severe and increasing inflammation; and the usual and necessary means of calomel, abstinence, &c., had been resorted to, as on former occasions, without any immediate effect.

"I imagine that the success of this treatment is conclusive against the case being one of ordinary gout.

"I remain your humble servant,

"*Dr. Granville.*" "F—— L—— G——."

CASE XIV.

Gnawing, and almost permanent pain at the pit of the stomach, occasionally much aggravated.

A gentleman residing in Queen Anne street, who has been all his life subject to irregular or disturbed digestion, and who in former years had suffered under ordinary attacks of gout, in one of which I had attended him professionally,—has experienced for the last five years an almost incessant pain at the pit of the stomach, near to that part which corresponds to the origin of the duodenum or first intestine. Sometimes the pain is increased by pressure, at other times not. When very acute it has once or twice occasioned nausea, and even actual sickness or vomiting. Palpitations of the heart seem pretty constant attendants on the pain, and the disturbance of the nervous system is simultaneous with that of the circulation. Still there is no reason for believing the heart or any part of its structure to be positively affected, as no such disorder can be detected by the stethoscope. This pain is generally of that acute character which plainly denotes its seat and origin; and although I will not deny that an obstinate dyspeptic condition of the stomach may be greatly concerned in the production of such a pain, I can have no hesitation in considering it as principally nervous. Every means, internal as well as external, having been resorted to without success, I recommended about three years ago a strong ammoniated counter-irritant to be used, which produced the happiest result. The pain has however returned from time to time since; but the patient is so well acquainted with the degree of relief he can always command, by laying a compress saturated with the same counter-irritating embrocation on the part, that whenever it becomes necessary, he as invariably has recourse to that embrocation, and always with more or less success.

CASE XV.

Acute and spasmodic pain of some of the nerves of the left thigh.

Reading over my diary for July 1833, I find that on the morning of the 3d of that month I was suddenly seized, without any

previous and obvious cause, with an acute spasmodic pain along the great muscles of the left thigh, about midway and in front, which pain increased to such a degree towards night, that I could scarcely walk home from the last house to which I had paid a professional visit, distant only a few hundred yards. The first coming on of the pain was accompanied by twitchings and distinct *subsulti* (jumpings) in the muscles. These, however, subsided as the pain became more and more fixed, until they disappeared, leaving the part in a state of great suffering. Pressure with the fingers on the part did not increase the pain ; the surface offered no indication of redness or of inflammation ; there was no swelling ; and I was not aware that, either by violence, or accident, or any other ostensible cause, I had given rise to this local complaint. My health was otherwise good.

In the course of the first night the pain diminished, but I felt it as soon and as often as I woke, and I dreamt about it. On the morning of the 4th of July, while standing to dress, the pain seemed much more bearable, and the spasms were not so frequent. By twelve o'clock, however, the pain got worse, whether I was sitting or standing, and by night it became again so intently acute, that I could scarcely bear it. This determined me on applying a strong antidynous lotion on the following morning, if the pain did not disappear or subside during the night. The application was effected on the third morning of the attack, and I selected the moment when the spasm, oscillating, as it appeared to my feelings, with acutely painful vibrations among the fibres of the muscles, seemed to be at its worst. The application of the lotion lasted two minutes and a half, during which time the pain and the spasm subsided, leaving the part red-hot (so to speak), without any blister, and perfectly restored to its natural tone. Every now and then, perhaps five times in the whole course of that day, I felt the twitchings in the part, but very faint and deep seated. Even these, however, had completely subsided, without any further remedy, before night; and the complaint has never visited me since.

CASES XVI. AND XVII.

Obscure, permanent, and occasionally exasperated pain of the right and left arm.

A nobleman, aged about 60 years, in whose family I have attended professionally for more than twenty years, and whose physical constitution, therefore, is well known to me, was suddenly seised, about four years ago, with an acute pain in the fleshy part of the right arm, sometimes ascending to the shoulder, but more frequently shooting down to the elbow and wrist, without, however, extending to the fingers. Although the pain became permanent after a few days, in spite of every species of fomentation and other local applications, and seemed to be of one uniform degree of intensity,—it used at times to increase very considerably, and then

its transmission from the top of the arm to the wrist was rapid, so as to be compared by the patient to the quick transmission of an electric shock in the same direction. The general health in the mean time appeared to have suffered little or nothing from this local complaint; and yet, in order to be on the safe side, and rather to satisfy the patient than from my own conviction of its necessity, the digestive organs were attended to medically, hoping that the pain might thereby be mitigated. The expectation was vain. The pain continued unabated for several weeks, and nothing seemed either to relieve it, or to throw any light on its nature and origin. Having on a former occasion seen me apply an ammoniated antidynous embrocation to a relative of his, who had been suffering from a nervous pain, which was shortly removed, the patient took upon himself to use some of the same, while absent from town; and in the space of ten minutes he succeeded in mitigating his pain so much, that it became not only bearable from that moment, but insignificant on the second day, and by the end of the week it had entirely left him. A very large blister was the result of this first and only application, which discharged very considerably, and from mismanagement, became troublesome for about a week, as I was informed afterwards: but this at last healed, and with the cicatrisation of the surface every vestige of the old pain left the arm, nor has it ever returned since.

A gentleman filling a considerable situation under government, subject to fulness of blood in the head, and to repeated attacks of dyspepsia, whose duties require a sedentary life, was awoke one night in the spring of 1833, with a very acute pain in the left elbow, shooting down to the wrist and tip of the fingers, the latter of which felt numbed and without sensibility; while, on the contrary, the part of the arm most affected seemed to be pervaded by an unusual degree of heat, which however was not distinguishable by the touch. I held this pain, on inquiry, to be symptomatic of a foul and loaded stomach, and of a general deranged state of the intestines. Accordingly, a suitable and powerful course of remedies was begun, which relieved the system generally,—at that time labouring under an unusually billious attack,—but which failed to remove the pain in the arm, or restore the natural feeling in the fingers. Not to enlarge unnecessarily on this case, I may state in a few words, that even at the expiration of some months after the general health had been quite restored, and after every possible means had been resorted to for the purpose of alleviating pain in the arm, the latter symptom continued unabated; until at length, an antidynous embrocation being applied, at first on the inside of the arm, considerably above the elbow, and a second time within the bend of the arm, (without exciting vesication) the pain was completely subdued; but as yet, and at the end of six years, the natural acute feeling in the tips of the fingers has not completely returned.

4.—SPASMS AND CONVULSIONS.

It is not easy to define what is meant by spasms, and what by convulsions, as terms distinct from each other. Both imply, in common parlance, a joint affection of nerves and muscles; the primary seat of the disease in each case being the nervous system, and the seat of the manifestation of the disease in each case being the muscular system; pain more or less acute accompanying necessarily both disorders. They may therefore be assumed to be modifications of one and the same morbid affection, with this further difference—that whereas the term spasm is generally employed to denote a convulsion of a limited part of the body,—the term convulsion is more commonly used to convey the idea of a patient whom we might imagine to be attacked with spasm all over the body. This explanation has no pretence to be either classically scientific, or strictly physiological, but must be taken simply as an exposition of the visible characters of the two complaints in question. It may be added that pain which, as was before stated, accompanies both, is more acute in the first than in the second disorder; and that were any danger attends either,—in the case of spasms it is the acuteness of the pain which may be considered as forming the source of danger; whereas, it is in the protracted contractions of the muscular fibres, and the consequent disturbance in the circulation of the blood through the vessels pressed upon by those contractions, that the danger consists. Thus, for example, in an attack of spasm of the stomach or of the heart, the pain is super-exquisitely acute, and often kills the miserable sufferer in a very short time; whereas in convulsions of childbed women, the protracted contractions and struggles ensuing therefrom, give rise to accumulations of blood in the cavities of the heart and vessels of the brain, which lead to destruction. Hence, again, in treating these very cases of disease, we see that, if we attempt to relieve the pain in the former by the lancet, we destroy the patient; whereas it is by the lancet only that the patient in the latter case can be saved.

With these few popular and practical distinctions respecting two of the most important species of nervous affections—important because of the danger that attaches to them—important because they have often baffled the best treatment—important also because they have offered an ample field to prove the efficacy of the counter-irritating plan of treating them—I proceed to narrate some interesting examples of the two disorders, tending to evince the superiority of the much neglected ammoniated counter-irritants in both, but more especially in the cases of spasms. With the ordinary mode of treating these disorders I need not trouble my readers; for the curious in such matters may consult many very valuable works of modern date, on nervous disorders,—particularly those of Sir Charles Bell, Mr. Swan, Bellingeri, and others, in which several treatments are detailed. But I cannot pass over altogether unnoticed

the more recent introduction into this country of the mode of treating nervous pains and spasmodic complaints by the alcaloid medicaments, made up into ointments, and applied externally. That the active principles of the several acrid and vegetable poisons thus employed have been useful in several instances, is not to be denied; but it cannot at the same time be concealed, that their use is attended with danger; and I have known instances where, even under the direction of the practitioner most conversant with such preparations, patients have been exposed to considerable risk. In regard to one of these new alcaloid medicaments, *delphinia* for instance, I have the authority of Dr Paris for stating that one grain of it, in a dram of ointment, rubbed on the part of the body affected by tic douloureux, will relieve that complaint. But he adds, that where spasm is present at the same time, both that substance and *strychnia* will do harm. On the whole, he has seen great mischief arise from the general and inconsiderate employment of the poisonous alcaloids so much in fashion nowadays in the treatment of neuralgic affections.

The first of the cases I am about to relate is one which on every account will be found to merit serious attention. The individual who is the subject of it has emptied indeed, to the very dregs, the bitter cup of suffering; first, on account of the bodily pain,—acute, persevering, and almost destructive,—which has formed the salient type of her complaint; secondly, on account of the repeated relapses of the complaint, at periods when health seemed almost completely restored; and thirdly, on account of the unwarrantable manner in which the case was dragged before the public on a recent occasion, distorted, exaggerated, and altogether represented to be what it never in reality was,—a mysterious and a mystical ailment. All this the individual in question has borne with fortitude, resignation, and that serenity of mind which is the surest means of promoting and finally securing complete recovery. At least I will vouch that, as far as I have been professionally connected with the case, either during actual personal observation and attendance, or, when I was not in attendance, by means of reports from the best witnesses,—the portrait I have here given of the patient and of her bearings is in no way distorted.

CASE XVIII.

Diurnal spasm of the lumbo-dorsal and cervical nerves, accompanied by difficulty of breathing, palpitation, and a sense of suffocation.

The Countess of ———, a married lady, closely allied to two of the first families in this country, was placed under my care on the 12th of March, 1835, on account of what was described to be a spasmodic complaint of the back, attended by acute pain, under which she had suffered for eight months, notwithstanding the assiduous and skilful care of Sir Charles M. Clark, Mr. Copland, and others, as well as of the late Dr. Hugh Ley, who was considered in

the light of family physician, and had attended her ladyship in her first confinement the year before. On the day in question, having first ascertained, at the commencement of my visit, that the patient was no longer under any other medical advice than that of Dr. Ley,—who during his then temporary indisopsition, had left it open to the family to consult any medical gentlemen they pleased,—I enquired into the history of the case, first, from the mother of the lady, and next from the patient herself, whom I found considerably reduced in flesh, unable to walk upright, and in a state of health far from satisfactory, notwithstanding her good spirits. Their history was afterwards confirmed by a full written statement of the origin and progress of the complaint, with which the patient favoured me; but to which I shall not refer (as immaterial to the object of my narrative) except merely to remark, that the beginning of the complaint was dated from a sudden and severe chill, caught at a water party in the month of July of the preceding year. From that period to the one at which I first saw the patient, the mere pain in the back,—with which the disease had begun,—by the gradual deteriorations of health which took place in different parts of the country, at different periods, and under different treatments, (while attended by some of the most experienced practitioners)—had assumed the formidable, and, to all appearance, unconquerable form under which it afterwards presented itself to my notice.

Turning now aside all collateral or extraneous matter as not necessary to our purpose, I will proceed at once to describe the state in which I found the patient, when the paroxysm of spasm and pain was full upon her. I had the first day promised to call again in the evening, so as to contrive to be in attendance by half-past eight o'clock—a little before the hour on which an attack was declared to come on every day. Some engagement, however, detained me for a few minutes beyond that hour. After entering the house, and while ascending the stairs, the first sounds that struck my ears were the loud moanings, and sobbings, and expressions of pain, which seemed to come from the second or bedroom floor, and which, as it turned out, were the loud expressions of suffering uttered by the devoted patient, on whom the attack had that evening come rather unexpectedly, and by several minutes sooner than the ordinary time.

When I entered the chamber, in which were the Duchess of ———, the lady's mother, and a female attendant, the agony of the patient must have been excessive,—judging by her contortions, the agitation and cramping of her limbs, and the severe pain of which she complained. She was laid flat on a couch, and her spine examined, when it was found that the whole length of it seemed in motion,—representing not unaptly, the annular movements of a snake. Even the iliac bones were drawn up and down with a jerk and violence of motion, such as I had never seen before, and should have deemed almost impossible, had I not seen it. The pain, like the electric fluid, shot up along the backbone into the occiput, and

thence through the head into the globes of the eyes, which became painful, rolled violently in their sockets, and gave a dismal character to the face, itself greatly agitated. The patient could just mutter a few words in answer to my questions, from which I learned that pain was then pervading the shoulders and arms as well as the lower extremities; that the surface of the abdomen felt sore on the slightest pressure, and especially so in the position she was then placed; lastly, that she experienced a sense of suffocation in the chest. There came on, while I was present, a severe cramp in the calves of the legs, and the feet felt very cold to the touch. As to the pulse, I found it next to impossible to count it, and the movements of the heart were equally rapid and irregular. Such was the violence of the attack, that although I endeavoured to press with some degree of firmness upon the back-bone, so as to keep it down in its natural position,—one of the many convulsive throes or spasmodic leaps of that part occurred more than once, which, by bending the spine almost double, anteriorly, threw off like an inferior weight the pressure of my hands. The scene was truly heart-rending, and not to be described in words. I prescribed and sent for a moderately strong ammoniated lotion,—considering this to be a case in which such a counter-irritant might be of great service. I explained, in the mean while, the nature of the proposed remedy, and the effect I hoped it might produce; although I could not venture to answer for the fulfilment of my expectations. Trusting that there might not exist any real local and substantial disorder of any of the nerves (organic,) but that the whole train of nervous suffering was one connected by sympathy with portions of structure then, and for many months in a state of irritation,—I had a right to assume, agreeably to my experience, that the embrocation I tendered would allay, if not altogether arrest, the agonies under which the fair patient was writhing.

The preparation came, and I instantly applied a thick compress of linen, three inches square saturated with it, on a portion of the spinal column, above the place which had been cupped and blistered during previous treatments. The watch was held by the mother. In three seconds the moaning ceased; in five seconds more the patient heaved a deep sigh; before the first minute elapsed, she said that "the pain was going," and presently "that it was gone." She exclaimed at the same time that "the application was a blessing; it smarted much, but was a pleasure to her." Two or three more deep sighs followed, which, I concluded, announced the cessation of the paroxysm. On enquiry afterwards, I learned that in general the diurnal paroxysms, which always lasted three hours, terminated in a succession of deep sighs. Wishing to make the matter more certain, I applied the same compress, still rather wet, on another and a little higher spot, and on a third place still higher, after having supplied the compress with a small quantity of fresh lotion. Altogether the three applications lasted three and a half minutes, during which the whole extent of the surface of the back-bone became red

and hot, but no immediate blister followed. Whether or not one might have risen had I prolonged the application, I could not, nor would I answer for. I left on the part the napkin which had served to keep down the compress, and which was moist with part of the lotion, in order to maintain, for a little while longer, the artificial counter-irritation; and I desired that if a blister ensued, the cuticle should not be broken; for which reason I requested the patient would sleep on her right side, and upon a cool and hard mattress, without an under-blanket. I further directed that no medicine whatever should be taken; to which the patient readily agreed, as she had already, of her own accord, determined not to take some assafœtida pills, which had been a few days before prescribed for her.

On the following morning I found that the patient had passed the whole night without any return of pain or spasm. At this second visit, Dr. H. Ley, whom I accidentally met in the street, accompanied me. He had seen the patient early in the morning, and learned from her the almost magical quickness with which the paroxysm had been put an end to on the previous night. When I explained to him, in the presence of the patient, as well as of the Duke and Duchess of ——, her father and mother, the simple combination (65) of the counter-irritant by which the success had been obtained, he was rather surprised that the same application should not have been thought of for his patient before; the more so as the idea of relieving her by the ordinary counter-irritants had not only been entertained, but acted upon, with very imperfect and only temporary effect. This last circumstance inclined him to fear, that even with the more powerful agent, now so successfully employed, the benefit might prove of short duration only.

Following up my notion of counter-irritation, I proposed, with the view to prevent further attacks, to excite and keep up rubefaction, and even vesication, if necessary, on the insteps. This being agreed to by Dr. Ley, the wet compresses were applied and tied firmly down to the insteps; but owing to the feet being exceedingly chilly, no sensible effect was produced by the lotion until at the expiration of nearly twenty minutes. In the evening no attack came on. The application being repeated on the feet, they smarted greatly this time in a very few minutes, owing to their having been made warm and sensitive by the first application in the morning. The only medicine I prescribed at this visit was a simple manna draught for the morning.

It would be useless, and it is not my intention, to detail the further history of this most interesting case day by day. From the 13th to the 21st no sort of attack or spasm came on. On the latter day, in the morning, having seen reason to apprehend a return of the complaint, I proposed to the patient a consultation for the evening, at which Dr. Ley and the earl her husband were present. There were then serious threatenings of a return of the spasm, which were realised at half after nine o'clock. Being immediately

placed in the same position as before, the counter-irritant was applied to the lumbar region, and pressed down with firmness. In one minute, by Dr. Ley's watch, the spasm stopped, and with it all further suffering. I repeated the application upon two other places, which smarted much in consequence of it; but no blister was produced. The patient soon after was left to herself, quite cheerful and comfortable.

Two other attacks took place between the 21st of March and the 17th of April, in each of which the pain, as well as the spasmodic action, was stopped within a minute of time, by the counter-irritant, in the same manner as before. Of the four attacks in five weeks (instead of one every day,) which the patient had had since my first adoption of the counter-irritating plain of treatment, two had extended to the posterior region of the head, from the very first moment of their appearance. In one of these the pain continued almost insupportable for upwards of half an hour, before the counter-irritant was applied; as I was not within reach for that purpose: but when at last it was applied, the spasmodic pain in the cerebellum or occipital region, ceased as instantaneously as in all the previous paroxysms; so that the head got well, although the embrocation was put on the lumbar or lower portion of the spine only.

In the course of the five weeks alluded to, the general health of the patient improved daily and visibly; her strength, her appetite, her appearance all improved; and having recovered at the same time the use of her feet, the back having become quite straight, and no symptom of nervous suffering being present, Lady —— was handed down into the drawing-room on the 2d of April; being the first time she had used her limbs for many months. This general amendment went on progressing from week to week, notwithstanding several occasional drawbacks of local pains, bilious derangements, indigestion, &c., until the 30th of May, when I took my leave of my patient,—who by this time had returned into society, and had joined in all its festivities, like one who had never been indisposed.

As the object in relating this case is to show in a forcible manner the powerful agency of the ammoniated counter-irritants, in the cure of painful and spasmodic affections of the nerves, when all other remedies have failed, I shall not touch upon either the previous or subsequent part of its history. I felt satisfied in my mind that the causes to which I ascribed the attacks I had succeeded in curing, were sufficient to account for the disease, and that they would again and again reproduce it, if at any time they were once more put in action: and I felt equally satisfied that those causes, by producing such spasms as I had seen, clearly pointed out the primary seat of the nervous disturbance. Those points once determined in my mind, it was my duty to act in accordance with them, and to give my directions, advice and cautions to the patient, consistently with the conclusions I had formed. The sequel of the case (which, however, no longer belongs to my province) has fully

corroborated the truth and correctness of my opinions. This lady, who has, since her recovery under my care, become a second time a mother, has had, I understand, returns of her spasms on more than one occasion, in Scotland, in the country, in London, and on the continent. With the details of those attacks, or how they were treated, or with the reason which led to the non-adoption of the plan so successfully employed by myself in a previous attack, I profess not to be acquainted. All I regret and deplore is, that so satisfactory, so complete, so universally admitted a recovery as the one effected in the spring of 1835, when health long lost had been restored, and an invalid of many months had been sent back into society like any other healthy individual,—should have been suddenly put an end to, after six months' duration, by causes totally unconnected with any failure in the powerful agency of the remedy I had employed to obtain it.

But although with the first recovery of the patient my professional attendance ever after ceased, the recollection of the benefit derived by my treatment of her did not fail to make her wish to afford the benefit of the like treatment to one of her relatives. The language in which that benefit is solicited, is at once the best proof of its reality, and of its value in the case of the patient herself, who thus tenders her unsolicited testimony of the success of my practice. In a letter written by Lady ——, some time in the summer of last year (that is just two years after her recovery under my care,) her ladyship thus expresses herself:—"My dear sir,—I venture to trouble you with these few lines, to ask you if you know any remedy for cramp. I have a young relative of mine, who suffers torture from it in her limbs, stomach and head; and considering the most wonderful manner in which you stopped my spasms, I apply to you in the hopes you may suggest some outward application likely to check these dreadful attacks, &c. &c." This was gratifying.

The strongest and most flattering testimony, however, for a physician, who, having done his utmost to benefit a patient by his art, and having taken the deepest interest in the case of that patient, has had the good fortune to conclude his professional attendance with success, (whether that success secure to him or not the gratitude of his patient) is to be found in those spontaneous effusions of acknowledgment and thanks which one may generally expect from the liberal-minded and highly-educated relatives of the sufferer, while yet the benefit obtained is fresh in their remembrance. This testimony it was my good fortune to receive from the Earl of ——, three weeks after I had taken leave of his lady; and I shall treasure up his letter along with other documents of the same character, to which, in the wane of my professional life, I shall revert with satisfaction. Although it will probably be said that it ill became me to insert that letter in this place, considering the very flattering terms in which the noble writer has chosen to express his gratitude in it, yet, as it contains the most frank as well as emphatic admission of the complete recovery of his consort, and forms consequently the

best conclusion to the narrative of her case, I have taken the liberty of inserting it :—

" ———, ———,
June 22, 1835.

" My dear Sir,—I cannot send the enclosed, without at the same time endeavouring to express the sentiment of obligation which I feel to you, not only for your most valuable and valued services, but for the undeviating anxiety and attention which you have displayed during your attendence upon Lady ——'s difficult and trying case. To you she owes, as far as medical skill is concerned, the restoration to health,—and I will only add that both she and I shall ever entertain the greatest gratitude for so inestimable a benefit. Believe me to be,

" My dear sir, yours very truly,
" ——— ———."

The only comment I have to offer on this most important example of nervous disease, is to wind up my narrative of its history in the language of the suffering patient herself—language which will convey, more forcibly than I have done, some of the characteristic features of her complaint. Having requested her ladyship, the moment she began to prosper under the counter-irritating treatment, to supply me with a written statement of the origin and progress of her sufferings, she proceeded to comply with my request, and from her full statement I select these few sentences :—" My nervousness increased every day until the end of December, 1834, when the spasms which I had suffered a few weeks before again returned, and never left me until your first visit early in March, when you stopped them with such miraculous expedition. They generally came on every evening between nine and eleven o'clock, although sometimes they would miss a day or two. The describing any thing like the degree of pain I suffered is *impossible.* Neither description nor idea can come up to such a reality. I will, however, endeavour to put down a few of my feelings. I was always able to tell for hours before, whether I was likely to have an attack or not. I generally felt cold and hot alternately ; my feet were mostly numbed and as cold as ice ; I started every minute, and felt a sort of contraction of the nerves, attended with strong muscular efforts and contortions. The pain appeared to begin in my back, and to shoot across to my stomach and side. *It seemed as if knives were running from every vertebra inwardly,* and shooting up to my head, not like a common headache, but like a pain at the back of the head, which darted through the brain to the ball of the eyes. Besides all these shooting pains during the spasms, I always felt as if the spinal marrow (I believe the inside of the spine is so called) was *burning and melting.* The vessels connected with it felt overcharged, and it appeared to me as if the nerves and muscles were twisted and knotted together, pulling me in different directions, with pain in the sides which drew me down most violently,

and a sensation withal, that made me think my back-bone must be crushed or broken," &c. &c.

These unheard-of sufferings then, which for six months had baffled all medical skill and every medicine, yielded in a few minutes to the external application of a preparation of ammonia! Surely, even if no other good had ever resulted from such preparations, when properly and suitably used, this instantaneous putting an end to a never-failing coming on of pain, day after day—this rescuing of the victim of that pain from its excruciating tortures for months together—even these things, I say, invest such preparations with a sufficiently strong claim to the immediate attention of the profession and the public.

CASE XIX.

Spasmodic attacks in the renal portion of the back mistaken for an affection of the kidneys.

Count ———, a young foreign nobleman who had not always taken the best care of his health, and whose constitution had at first been impaired by the climate of this country, was seized, sometime in the spring of 1830, with acute, thrilling, and *drawing* pain, a little above the edge of the hip-bone on each side of the spine, which it seemed also to involve. A feeling of contraction, or of an inward puckering up of parts, accompanied each attack,—which, from being at first short and not very frequent, became afterwards longer in duration, as well as of more frequent occurrence. No plausible cause could be assigned for the attacks. It is needless to recapitulate all the various steps and measures the patient had been desired to adopt, with the view to his recovery; for none of them seemed to have made any impression on the pain. Some medical men, indeed, (and among them the late skilful surgeon Mr. Rose) having imagined that the attack might be referred to the presence of gravel, or a calculus in the kidneys, or to inflammation in the cavities of those excreting organs, leeches, cupping, and the ordinary counter-irritants had been applied on the painful part. The success was not encouraging, and the patient was about to make up his mind to bear his sufferings without murmuring and with resignation, when I proposed to him the use of the ammoniated lotion. The proposition being acceded to, we had immediate and ample reason to be satisfied with the result; for at each application, which was rendered necessary from time to time by the succession of paroxysms of pain, the lotion arrested it almost instantaneously, thereby shortening the usual period of suffering, from several hours to a few minutes. That the neuralgic pain thus controlled by the counter-irritant, was dependent on some general cause, not within the influence of that application, is more than probable, seeing that the paroxysms continued to recur (although at longer intervals) in spite of its powerful agency in stopping them when once they had begun. Still it is a fact, that but for the agency in question the

patient must have gone on suffering hours of agony, which no other remedy appeared capable of alleviating. Accordingly I learned afterwards from the patient, that he never traveled to any distance from town without carrying with him a small supply of the lotion; and although now, at the distance of some years (having recovered his general health and natural strength during a short residence on the continent,) Count ——— can boast of being free from the attacks of his former complaint of the nerves, as he has lately assured me,—yet he never fails to use the counter-irritating lotion, if the slightest indication of pain comes on in the old place, and always with the same instantaneous good effect.

CASE XX.

Spasm and convulsive thrilling of the nerves and muscles in the right side of the back.

An unmarried lady, aged between forty and fifty years, residing with a most affectionate sister not far from Cavendish square, had for many years laboured under frequent attacks of hemicrania, dependent on a thoroughly deranged state of digestion, although no person could live more cautiously or temperately than she had done all her life. A few years back she became subject to affections of the trachea and bronchia, in several attacks of which, her medical attendants, and myself among them, were compelled to use the lancet rather freely. Of this tendency to attacks in the chest and throat, the patient had in a great degree been able to set herself free within the last two or three years, and with that tendency went away likewise the liability to frequent sick and nervous headaches, and to general derangement of the stomach. But in lieu of all this, a singular kind of seizure of the nerves and muscles of the right super-renal region has set in (1836), which, during the last eighteenth months, has, on many occasions, required medical assistance. As no other professional person but myself, except when she resides in the country, has attended this lady for the last eighteen years, her constitution is thoroughly known to me; and the new garb, therefore, which her natural disposition to congestive accumulation of blood (producing pressure on the nerves, and consequent pain) assumed in the present attacks, was not likely to mislead me. Medicines were accordingly prescribed to remove the congestion, and by means of local as well as general evacuants and depletion, we obtained a notable relief from suffering. It was remarked that pressure hardly increased the existing pain, unless the part was pushed inwardly with considerable firmness and perseverence; and also, that if the patient, immediately upon the coming on of an attack, laid herself down in a horizontal posture, the pain became soon very bearable. With all these contrivances and means, however, the real bodily suffering, during each paroxysm, never diminishes in so short a time as when the

strongest combination of ammoniated counter-irritants is applied to the part, and firmly pressed upon it for the space of five or eight minutes. For, although the requisite remedies prescribed to cure the disease, have each time succeeded in that object at the expiration of a few days, the spasmodic or nervous pain in the part, as already described, has nevertheless continued in a greater or lesser degree, during the whole period of the cure, unless the assistance of the counter-irritant in question has been had recourse to. That it has not been resorted to on all occasions, was owing to the apprehension of its forming a blister, as had been the case once or twice, in consequence of having left the application on the part too long. But such omissions have been of very rare occurrence; for the patient is now intimately persuaded of the immense advantage of cutting short, by so simple a remedy as the antidynous lotion, a pain which is described, as nearly as possible, to be like that of the worst description of internal *tic douloureux*. This is so much her present persuasion, that in two or three of the later attacks (all of which had exhibited a gradual diminution in their intensity), she has herself had recourse to the ammoniated counter-irritant, without requiring my aid, and with the desired effect.

CASE XXI.

A similar attack as in the preceding case, coming on in the left super-renal portion of the back.

The subject of this case was also an unmarried lady, nearly double the age of the preceding patient, being eighty-six years old, and of a robust constitution, though delicate in appearance. During the last nineteen years that I have had the honour of attending this lady professionally, I had occasion to notice, as a predominant feature in her constitution, a tendency to fulness of blood in the head, as well as to a disturbed circulation, particularly in the heart. Cupping, and even bleeding at the arm, have been often resorted to, and always with success; and as she has advanced in years, the fulness in the head, as well as the pain and palpitation of the heart, have gradually disappeared. The only general trait of a morbid description, if it be one, remaining in her constitution at present, is an obstinate habit of constipation, which ought not to surprise us, considering the sedentary life she leads, with few opportunities of out-of-door exercise or airings. About two years and a half ago, feeling uneasy respecting a small tumour that had appeared near the surface of the body in the thoracic region, and had kept forming in spite of all care and appropriate remedies, I suggested the propriety of its removal, to prevent serious consequences. Accordingly, my late lamented friend, Mr. Earle, was consulted at my request, who, after two examinations of the part, agreed with me in considering the tumour as likely to assume a malignant character, and as one which ought to

be removed, did but the age of the patient warrant the operation.[1] To the performance of it, however, I took upon myself to encourage that skilful surgeon, assuring him at the same time of the otherwise sound state of health of the lady, and of the pure elasticity of her frame. The patient herself became eager for its performance, and would brook no delay; so that finally the tumour was removed, with the part in which it was seated, by an operation that lasted only some minutes, and from the effects of which her ladyship completely recovered in the course of six weeks. The careful investigation of the tumour itself, after its abstraction, fully proved the propriety and necessity of what had been done. In another twelvemonth the lady would inevitably have perished under excruciating tortures. Why I have entered into all these particulars, will appear evident in the sequel of the present narrative.

For nearly two years after the operation, the patient seemed to enjoy immunity from every complaint; when one day in the course of the last winter, after a rather tedious attack of influenza, and when I had just taken my leave, her ladyship was suddenly seized with a most excruciating pain in the left region of the back, midway between the upper edge of the ilium, or hip bone, and the lowest of the true ribs, close upon the spinal column. The attack was accompanied by no symptoms which could denote an affection of the kidney, or any of its annexes, but it soon brought on tremor, spasm, and considerable fulness in the pulse. The patient was cupped; and for that night the pain seemed lulled by the withdrawal of blood. Soon, however, the symptoms, indicative of congestive inflammation keeping up spasmodic action, appeared again, and the patient was bled by Mr. Brown, besides taking all such other remedies as in cases of this kind a medical man thinks himself justified in prescribing. The blood drawn was not only thickly buffed, but highly contracted, or *globularly cupped.* All these successive steps of the treatment seemed to produce corresponding good effects on the main disease, without curtailing much the strength of the patient, who was desired to keep her bed. But the pain was still there; it darted from place to place; it penetrated into the interior; it shot downwards into the sacrum; it ascended towards the region of the heart; it caused a species of paralytic tremor of the hand, and a chattering of the teeth; it was not forgotten during sleep; it was ever present during the waking hours; and when the finger searched carefully the spot, if it pressed upon that spot, the pain was somewhat increased. Might not this be a state of things denoting some morbid formation in the interior, analogous to the tumour that had been removed from the surface on the same side, though much higher up, two years

[1] Another consideration restrained Mr. Earle in this case. The numerous connections of the patient with some of the first families in the kingdom, might, he feared, deem it a rash act to proceed to a surgical operation of such importance in a person so far advanced in years.

before? I left Sir B. Brodie, whom I called in consultation, to determine that point. Sir Benjamin minutely examined and enquired into the case. He brought the result of his long experience to bear on the question; and although he admitted that there was in some of the symptoms sufficient warranty for entertaining the apprehension I had expressed, and also, that in two instances which had come under his notice, he had known the formation of an inward malignant tumour to occur a long time after the removal of another similar tumour from the surface of the body; still he was disposed to think differently and more favourably of the present case. The treatment, however, which had hitherto been pursued, was to be continued, and an external counter-irritant applied, if I thought it necessary.

To the latter alternative we were soon reduced, in consequence of the gnawing and spasmodic painful twitchings proceeding with persevering obstinacy. And yet no corresponding tokens of fulness or inflammation were present at the same time! The other functions, moreover, had been brought to a natural standard, but the patient nevertheless suffered still, and suffered greatly. Under these circumstances, considering that rapidity of effect was desirable, I preferred an ammoniated counter-irritant to an ordinary blister, and it was applied accordingly, with the same instantaneous good effect, *cessation of pain*, which I have always seen it to produce. The application left a blister in this case, which discharged for some days; but the acute and spasmodic pain never again returned. Her ladyship is now once more, and for the last two months has been, in her usual state of health.

CASE XXII.

Larval spasm, or contraction of the muscles of the right side of the face.

I have designated as "larval," an attack of spasm or nervous affection of certain of the muscles of the face, which at once, and during the time the disease lasts, disfigures the countenance, and gives to it the appearance of a hideous *mask*. Such attacks generally come on unawares, and they spare neither young nor old people—neither the one nor the other sex. Yet they are not of very frequent occurrence, and must not be confounded with that disturbance of the symmetry of the face which, in older persons, is produced by cerebral or cerebellic palsy. An attack of larval spasm is not always accompanied by pain, nor are the parts affected by it morbidly sensitive, except to cold air and sudden draughts of wind. The case I am about briefly to relate, may be taken as a specimen of the general character of this species of nervous affection. A young lady, the daughter of a parochial clergyman in a populous district, awoke at her usual hour one morning in July, 1836, with a somewhat odd sensation about the mouth and right cheek, which instinctively brought her hand to the part, when she fancied she could feel a wrinkled and rigid

state of the muscles, that excited her alarm. She rose from the bed, and ran to consult her mirror, in which, to her great horror, she saw reflected a hideous face. The mouth was drawn to the right side, in an oblique upward direction, pushing up the muscles and skin of the cheek between the upper lip and the eye; the lower lid of which was drawn down at the same time, and almost everted. Some of the side teeth on the right were thus uncovered; while the front teeth, on the contrary, were partially concealed by the moveable covering of the left cheek, which was dragged towards the central line of the face, by the spasmodic contraction of the right cheek. In this state I saw the patient, who was brought to town to consult me, from a distance of many miles, after having been submitted in vain to *every* species of treatment, including veratria and galvanism, but exclusive of homœopathism and magnetism. This singular spasmodic affection had lasted nearly three months; nor had it, in the course of that time, shown any tendency to relax, except when blisters were applied to the affected cheek; an operation which was performed on three separate occasions. I collected, from a written statement placed in my hands by the mother, that a sufficient cause connected with the general health of the young lady was supposed to have existed for the attack; but it was added that great disappointment had been experienced on finding the attack subborn and unyielding, after that cause had been removed, and the general health restored. On questioning the patient herself, I imagined that the real existing cause of the attack had probably been a protracted action, on the right cheek, of the cool night air, to which that side of the face had been suddenly exposed, in consequence of the young lady seating herself, at the conclusion of a very heating dance, in the recess of a window, the sash of which was partially thrown up, and presenting her right side to the coming-in draught. Be that as it may, the local affection, as I before remarked, had continued unmitigated when I first saw it; although the patient seemed in excellent health. Her aspect was truly distressing to behold, and my readers will form an approximating idea of it, if they can fancy all that is moveable in the right side of the face—the half of the mouth, to wit, the cheek, and the lower eyelid—fitted up inside with strings, obliquely directed towards the temple, and there passed through a single pulley, and drawn up through it, and in that state kept fixed for three months. The representation would by no means be an exaggerated one. The patient was in good spirits, however, and liked to talk, although her speech and the sound of it were much affected. Her pulse was natural, and the movements of respiration and deglutition were performed without difficulty. I had seen two cases somewhat analogous, many years before, which had given way to repeated doses of calomel, and the combined action of blisters; but in the present instance these means had been already resorted to, with hardly any beneficial effect. It would have been useless, therefore, to have proposed them again. Recol-

lecting the success I had met with in the case of the locked jaw the year before, I suggested a strong ammoniated counter-irritant, and applied it, as soon as it could be procured, to the right temple, as well as to the posterior part of the head; for which latter object some of the hair was cut off. The application lasted ten minutes. It produced pain, which extended into the orbit, and down the cheek; but no vesication followed, although all the parts were of an intense crimson colour. No appreciable change in the contractions was observed at that time; but in the evening of the same day, when the mother went, as was customary with her, to bid good night to her child, she found her already sound asleep, and *the right eye completely and naturally closed*—a circumstance she had not before noticed for three months. This information encouraged me, at the next visit, to repeat the counter-irritant on the occiput, and also immediately behind the ear. The surface of the right temple was too sore to admit of a second application. This time, after a quarter of an hour, the lotion raised a large blister on the back of the head, which soon filled, and was preserved intact. But while this process was going on, the contracted muscles of the cheeks relaxed, and the mouth returned very nearly to its wonted position and dimensions. No further application was used afterwards, and the complaint gradually subsided, until it entirely disappeared in the course of a week from the time of the first application of the ammoniated counter-irritant.

I have since heard of another and a recent case, similar in many respects to this, except that the attack was on the left instead of the right cheek. It occurred in a family with whom I am acquainted, although I did not see the patient. In that instance, too, Dr. Chambers and Sir B. Brodie (as I understand) employed calomel freely, and ordinary vesication, by means of which they completely cured the complaint, though not quite so quickly as in a week's time; still sufficiently so as to warrant me in pressing their case into my service, as another example of the great advantage that may be derived from counter-irritation, judiciously and perseveringly pursued, in the treatment of nervo-muscular spasms.

5.—Epilepsy.

Who is there among my readers, acquainted with the singular as well as distressing character of this complaint (so well known in every class of the community), who is not, at the same time, aware of the great difficulty of curing it, and of the inefficacy of almost all the remedies suggested and employed against it during many centuries? Still a very great step in advance has been made within the last twenty-five years in the treatment of so obstinate a malady; and it is to the minute anatomical investigations that have been made respecting it in foreign countries, where some of the very best and most valuable works on the subject have been published, that that step is due. The first and leading improvement in this

question has been the settlement of the long-debated point, touching the seat of the disorder; the next has been that of determining, by positive demonstration, the existence of a real and a sympathetic epilepsy. It is now pretty generally admitted, that the former is developed under the pressure of a certain morbid affection of the spinal cord, and of the roots of its nerves, during which there is a gradual softening of their substance; while the latter consists in a morbid action only of those organs, momentarily provoked by some original disorder, extant in one or other of the principal viscera of the body. This distinction between the two modes of disease, as well as the discovery of the seat of *true* epilepsy, is of the utmost importance, and both are due to modern science. They have led, as might have been expected, to a corresponding change, and, one may freely assert, to an improvement, in the manner of treating the real as well as the *mock* disease; and I hold that counter-irritation is foremost in the list of the more successful means very recently employed for their removal. My experience in this respect has been extensive; and I entirely coincide with such of the very able writers on epileptic disorders as affirm, that no good can be effected in them, unless external means be employed to change the morbid condition of the spinal system. I will relate one or two cases taken from the experience of continental writers, before I bring forward any from my own practice.

CASE XXIII.

Sympathetic Epilepsy.

A young woman was presented in 1837 to Professor Esquirol, at the Salpêtrière Hospital for Female Lunatics, near Paris, during my visits to that establishment, who had for some years been suffering from epileptic fits every four weeks, at particular periods, and who had been treated for them by some of the first medical men in the metropolis. Esquirol had at this time under his care, in the above-named asylum, a whole ward of epileptic patients, on whom he used to make cautious and proper trials of every species of treatment which the faculty, whether national or foreign, recommended from time to time—such as that by nitrate of silver, tartar emetic, and sulphate of zinc. But as he had not hitherto obtained any appreciable good result, he determined on managing the present case differently. For this determination he considered himself warranted, by the repeated observations he had made, in cases where the patients had died in consequence of severe paroxysms of epilepsy, and in most, if not all of them, he had found the superior portion of the spinal cord in a softened condition, and of a gray or rosy colour. Such a state of things induced him to believe that the employment of counter-irritation in the shape of the moxa, applied several times over the vertebræ, might afford a better chance of recovery. He therefore acted on that principle; and he was not long in discovering the correctness of his reasoning, by

the success of this treatment. The paroxysms of the disease in the course of the first few months became less frequent, and of much shorter duration, until at last they ceased altogether.

Professor Esquirol recorded this case in a memoir, which he read in 1817, before the *Société de la Faculté de Medécine*, in Paris, on which occasion I had the honour of being present as a member; and he has since adopted the same method in more instances than one, with equal success. The preceding case might by some be considered as one of sympathetic, or "mock" epilepsy. The next is one, treated also by counter-irritation, which admits of no cavil, as to its being or not a case of "true" epilepsy.

CASE XXIV.

True Epilepsy.

A young mason fell from a lofty scaffold, on his back, and was picked up senseless. He was carried to the *Hôpital de la Pitié*, and placed under the care of the celebrated Serres, than whom no living physician is a better authority in maladies of the nervous system. After a long and tedious treatment, the poor fellow so far recovered his general health as to be able to leave the hospital, and return to a moderate exercise of his art. At the expiration of a few months, however, genuine epileptic paroxysms came on, and he again was forced to seek relief within the walls of the same hospital. The views of Esquirol, as to the condition of the spinal marrow in epilepsy, had just then been made known, and in some examples of that disease, observed also by Serres, and others, those views had been confirmed. In lieu therefore of wasting time in the trial of numberless medicaments and nostrums for the cure of it, a local depletion of the vessels was ordered in the first instance, and was repeated from time to time, affording relief, but making little impression on the number of paroxysms. At length a cerate was prepared, made by mixing caustic ammonia with purified butter of cacao, which being spread on linen, was applied over and along the spine. By this means the part became blistered in a short time, and was brought into a state of active surface-discharge, through which the paroxysms of epilepsy became less frequent, and less important, until they at last ceased entirely. This case also occurred during my visit to the Parisian hospitals, in 1816 and 1817; and in a series of letters at that time sent by me to the London Medical Repository, on the state of medical science in Paris, I announced the composition of the ammoniated cerate or counter-irritant here mentioned, as a substitute for a common blister.

CASE XXV.

Protracted case of Sympathetic Epilepsy completely cured at last by Sulphate of Zinc taken internally, and by external Counter-irritation.

The subject of this case, a lady, began to manifest symptoms of an epileptic character at the early and critical age of fourteen years. At first these symptoms were not heeded much, though means were suggested to prevent their recurrence, and to shorten their duration whenever an attack came on. None of the many plans, however, adopted, either in England or abroad, seemed to produce the smallest permanent good effect in staying the progress of the disease, which, on the contrary, growing with its growth as it were, became more and more importunate and distressing as the young lady advanced in years. As there could be no doubt of the nature of the complaint, and the source to which it was to be ascribed, every measure was adopted to counteract the evil tendency of the latter, and so to render it at least perfectly harmless. In all this we succeeded but imperfectly. The attacks were at times so capriciously frequent, and at others so unaccountably apart, that no relation could be established between the curative means employed and their result, with the view of forming a correct opinion as to any success already obtained or hereafter to be expected. The attacks came on at night during sleep, as well as in the daytime; and the patient would, on their first coming on, invariably fall to the ground, if she was standing at the time and alone,—a circumstance of a very rare occurrence indeed, owing to the unceasing and solicitous care bestowed by two most affectionate parents upon their amiable daughter. Years rolled on in this manner, and the lady grew to womanhood, without being able to produce herself into society, owing to the incessant apprehension of an attack occurring in public. Having had the constant management of the case from the first, and having declared my deliberate opinion respecting its final issue, to which I steadily adhered,—I never allowed myself to swerve from the line of practice to be pursued. At the same time, great allowance and deference being due to the anxiety and painful impatience of parents, I took care never to stand in the way of any new and safe trial of remedies which were proposed by others, whether professional or domestic; and our patient went through not a few of them in the course of some years, without any material benefit.

It was at last determined to place her under the persevering action of those remedial agents on which I had from the first stated that I would rely, and could venture to promise a cure; and it is scarcely necessary after this to add, that counter-irritation was one of those agents. This was obtained by means of the ammoniated lotion used at the vesicating degree of strength on the vertebral column—an application which soon afforded ground for rejoicing that it had been resorted to. Along with it an occasional energetic evacuant (not composed of mercury—for that drug had been em-

ployed before, *ad nauseam*, by others to no purpose), and small doses of sulphate of zinc, in pills, daily repeated, were conjoined. Through all these means the disease was at last conquered; and the lady has for the last three years returned to her station in the world, *perfectly well*, in bodily as well as intellectual health,—the knowledge of her former harassing malady, of fourteen years' duration, having all that time been confined to about half a dozen individuals in the family.

CASE XXVI.

Another example of Sympathetic Epilepsy from a cause different from the preceding—shortly cured by Counter-irritation.

Mrs. ——, the lady of a wealthy banker, whom I had had occasion to attend between the years 1822 and 1830, in several of her confinements, was during the first months of pregnancy subject to paroxysms of epilepsy,—the attacks coming on soon, if not immediately, after the beginning of gestation, and continuing more or less twice and sometimes three times a month, until after the period of quickening. The remainder of the nine months was generally passed in tranquillity and perfect health; nor was there any thing particular at the time of the confinement itself. During the first and second pregnancies, every species of remedy that could be thought of had been resorted to, in hopes of stopping this strange affection, which in every respect resembled epilepsy. The profession know that such a form of nervous affection is by no means singular, though of rare occurrence, in females who are placed in the same delicate situation. Bleeding from the arm produced no effect. Cupping near the region of the spinal column made no impression. Ordinary blistering was suggested, and adopted during one or two paroxysms; but the tedious, troublesome, and painful nature of the remedy, which after all was too slow in arresting the attack when on, and inefficient in preventing the next attack, induced the patient to resist all further application of it. Still it was deemed likely that counter-irritation on some part of the spine, if it could but be produced rapidly, indeed instantaneously, while the paroxysm was in action, might tend to check it. On one occasion, that the epileptic attack, accompanied by more than usually severe convulsions, foaming at the mouth, rigidity of the limbs, and other symptoms, seemed to threaten some serious consequences, I prescribed an extemporaneous liniment, composed of essential oil of thyme (oleum origani), tincture of cantharides, and soap liniment; which being rubbed up and down the spine (the patient lying on her side on the bed) seemed in the course of a quarter of an hour to produce a rally. But altogether the result was not as satisfactory as could be wished, and therefore all further attempts at interfering with the nervous symptom, either during that or any other subsequent pregnancy, was abandoned. In the year 1830, however, on the occasion of my attending Mrs. —— for the last time as an

accoucheur, finding her again under the visitation of her strange malady during the early period of her pregnancy, and having then the power of the ammoniated counter-irritating lotion at my command, I prevailed on the patient to allow me to try that application in her case. A compress strongly saturated with that preparation was accordingly placed on the lumbar region, and pressed down for five minutes, while the convulsive motion of the limbs, the foaming at the mouth, the gnashing of the teeth, and apparent unconsciousness were going on. At the expiration of that time all these symptoms had ceased, and Mrs. ——again got on her feet in less than a quarter of an hour, without either of those feelings of lassitude and general soreness of the body, or the intense headache, which used invariably to follow the ordinary paroxysms after going through their natural period of duration of seldom less than an hour, and, at times, more. No blister followed the application. The same result was obtained at each succeeding attack of the disease, the number of which was not diminished materially by the external application, but their duration always; thereby showing the superiority of the remedy in question to any other employed in affording instantaneous relief. It is worthy of remark that the mother and grandmother of this lady had been (as my patient assured me) subject to the same temporary nervous affection, when placed under similar circumstances.

CASE XXVII.

Genuine Epilepsy from disease in the Spinal Nerves, affecting respiration between the attacks.

In the absence of Sir Henry Halford, I was summoned, on Monday, May 25, 1835, to Lady ——, in the vicinity of St. James's square, who had been for two years and a half under the care of that physician, with a complication of serious symptoms, principally of a nervous character. Her ladyship, for many years previously to the last mentioned period, had been my patient, and occasionally also of the late Dr. Baillie, whom I was in the habit of calling in consultation on every emergency. We were both aware of the liability of our patient to epileptic attacks, although these were of rare occurrence; and at a somewhat later period, not only was an opinion to that effect given in writing, with directions to the patient how to manage the case when she was absent, but with that opinion was also coupled a declaration of our apprehension that the upper portion of the spine was affected, and might become still more seriously so as she advanced in life. During the many occasions in which I had to attend Lady —— for other complaints, the views above alluded to were never lost sight of, and the treatment was always so managed as to be in accordance with them, no matter what the nature of the complaint might be, for which medical assistance was required.

At the time mentioned in the introduction of this case, Lady —— had, as I before stated, been confined nearly three years, chiefly in the recumbent posture, scarcely able to stand, or use her limbs, and was on more than one occasion said to have been in the most imminent danger. Sir Henry Halford was the regular attendant during that period, but the uncertainty of his attendance, owing to his professional avocations at court, left it open for any other medical man to be called in.[1] Why my services were again sought after an interval of three years, and after they had been dispensed with without any better reason than there was for calling them again into action on the present occasion, I have never been able to discover; nor is it much to the purpose to enquire. Probably the knowledge which had by this time spread wide in the higher circles, of the success obtained in the Case XVIII., induced her ladyship to try how far the same plan might succeed with her; for in the state to which she was reduced, spasmodic, or convulsive attacks in the spine, as I found afterwards, were of frequent occurrence. The description of the complaint supplied by her ladyship at my first visit, was that she had acute and intense spasms in the chest, which she felt to begin between the shoulders, and high up in the neck, pass through her heart (as she expressed it), stop her breathing, and produce a sharp pain in the breast-bone. She added, that she often experienced such feelings, but never so severely as during and after an attack of *spasm* (her ladyship would never admit the existence of epilepsy), one of which she had had the day before, when she was induced to request my attendance. Although solicited to do so, I declined using any counter-irritating application until I was satisfied of the real character of the attacks. I prescribed what medicine appeared to me to be proper, and called for by the symptoms present, and postponed the employment of any counter-irritant to a future period.

Between the 26th of May and the 1st of June, nothing material occurred; but on the evening of the latter day, at about seven

[1] From a professional letter I received about this time, addressed to me at the request of the patient, by her medical attendant in the country, I culled the following corroboration of my views: "As early as the summer of the year 1831, upon an examination of the spine, I found evidence of the existence of considerable preternatural sensibility, extending from the beginning of the cervical, to about the middle of the dorsal vertebræ. For this morbid condition of the spinal nerves, in addition to the most perfect quiet in the recumbent posture, her ladyship submitted to a trial of long-continued counter-irritation, in the form of blisters, moxa, and subsequently to the severer remedy of a seton in the neck, without much apparent benefit," 30th May, 1835. The seton was no longer in existence at the time of my visit, and it is perhaps to be regretted that it was not so. Such forms of counter-irritation do not positively cure epileptic disorders, but who can say that as long as they are in action they do not tend to keep such disorders in check, and ward off danger? My experience goes to the affirmative of that question; but in the present case the patient herself, probably got tired of an irksome remedy, which did not produce every thing that was expected from it.

o'clock, I was hastily sent for, in consequence of a return of one of her attacks, at the conclusion of which I arrived in —— square. The patient had just recovered, and complained of severe pain at the nape of the neck, as well as in the back-bone between the shoulders, which was increased by taking a deep inspiration, and produced, what was indeed very manifest, a species of spasmodic breathing quite painful to witness. The pulse was very feeble, quick, and quivering. The countenance was pale and tired, the lips livid, the back chilly, and every other part of the system deranged; as we usually find in cases of spasmodic complaints after a violent attack. Having added half an ounce of the strongest pure liquid ammonia to an eight-ounce phial of the usual ammoniated counter-irritant, I applied this mixed liquid for a few minutes, first to the spine, and between the shoulders, and next, for three or four minutes also, to the region of the heart. The effect on the pain in the chest and back, and also on the breathing, was almost miraculous. Before I left the room the patient could breathe quite freely, and no longer experienced any pain whatever.

On the 3d of June I was again hastily summoned to my patient, who was now actually under the writhing agony of an attack, so nearly allied to epilepsy, that I should not be able to comprehend any medical man who should feel disposed to view the attack differently. It was on this occasion I learned from the lady's attendant, and from friends, as well as from a sister of the patient, a lady of the very first rank in society, that the attack I was then witnessing was nothing different from those she had been having for the two or three years previously, and which no medicine had been able to relieve. The strongest ammoniated lotion was again immediately applied by myself, to the back and region of the heart, simultaneously pressing the chest between the two applications, for a few minutes, by the watch, at the end of which time the paroxysms terminated. Thus, in two instances, the new counter-irritant, the like of which had never been employed before in Lady ——'s case, had been the means of considerably curtailing the duration of her dreadful bodily sufferings.

But what relieves yet does not completely cure, seldom affords sufficient satisfaction to the patient; and accordingly in this case, after a few more visits, and a consultation with Sir Henry, it was suggested by that physician that the patient should be, for the present, left to his own occasional visits, and the usual succession of medicines, without any further active interference. The suggestion was a proper and a reasonable one, and I acceded to it. The sequel of the case, as I afterwards learned, proved the correctness of the view I had taken of its severity and incurability; at the same time that it confirmed the truth of the opinion given thirteen years before, by Dr. Baillie and myself, of the nature of the complaint. Her ladyship died a few months after she left London for the family seat, and a posthumous examination showed the extent of the disease in the medulla oblongata and spinal cord.

6. SPASMODIC OR CONVULSIVE ASTHMA AND HAY-FEVER.

If the reader should have an opportunity of looking into that clever and industrious compilation of every thing that is or has been known in medicine, called "Dr. Copland's Dictionary of Practical Medicine," and will refer to his article "Asthma," he will there find that there are a great many varieties of that oppressive disease of the respiratory organs,—among which one is emphatically styled the *convulsive* or *spasmodic* asthma; for this reason, that the tubes in the lungs, through which the air is to be inspired and expired, are unnaturally constricted, or in other words their diameter is diminished, and this by a spasmodic action of a recurrent character, which gives to the general act of respiration the appearance of convulsion pervading the whole region of the chest or thorax. Such a complaint is at times accompanied by positive pain; at others not so, but mere oppression, anhelation, or difficulty of breathing, forms the whole extent of the inconvenience. Under any circumstance, an attack of spasmodic asthma is painful and distressing to witness, but doubly so when we are told that the patient is suffering acute bodily pain at the same time, in some part of the chest. Nor is it rendered less distressing by the consideration that, in severe cases of the complaint, when the attacks are both frequent and of long duration, the retention of blood in the head, to which they give rise, predisposes the patient to apoplexy. It is to be understood that I speak here of such spasmodic asthma only as is clearly not the effect of sympathetic action, from the presence of a disease in the heart; for in such a case no relief is to be expected of a permanent nature. I need not enter further into the symptoms of spasmodic asthma; as the document with which I introduce the first case of this disease, which was relieved by artificial counter-irritation, sufficiently explains its character in the words of the patient himself.

Hay-fever, of late years so much noticed in this country, is likewise a variety of asthma, accompanying a peculiar endemic catarrh of the head and throat, in which there is spasm and constriction of the air-vessels, but without positive pain, and with no appearance of convulsion. This disease, which prevails only at particular seasons of the year, and in certain peculiar localities, is a rebellious one, like the spasmodic asthma, but both will yield to the action of ammoniated counter-irritating applications,—as the following cases will prove.

CASE XXVIII.

Spasmodic Asthma complicated with Apoplexy.

On the 14th of April, 1835, the lady of a general officer, occupying a high station in the administration of the army, addressed me the following note:—"I desired a young friend of mine, the eldest

son of Mr. ——, of Yorkshire, to consult you for what appears to me to be a desperate case, as it seems that none of his previous medical advisers have done him good. It would indeed be a great consolation to us all, if in such a complicated case as his of asthma and apoplexy (for so I understand it to be) you could strike out something to prolong a life very precious to his family."—On the following day I was requested to attend the gentleman himself, at one of the hotels in my neighbourhood. I found a tall, well-made, good-looking young man, aged twenty-nine years, apparently of robust constitution, labouring under an attack of spasmodic asthma, which ceased almost immediately after my entering the room. His father and brother were present. I examined the chest minutely, and could only detect the usual whizzing and somewhat puerile sound which accompanies respiration in such cases. The movements of the heart were unequal, but the heart itself seemed in a normal state. As a residence in the atmosphere of London invariably aggravated the disease, it was decided that he should begin at once, under my direction, to take the prussic acid, which (as stated in my publication on that remedial agent when I first introduced it into the practice of medicine in this country nineteen years ago) I hold to be a most valuable remedy in cases of asthma; and that as soon as another attack supervened, I should be sent for, with a view to apply immediately a counter-irritant to the chest. In the mean time I requested to be favoured with a written history of the case for my consideration, as I had not then time to listen to the particulars of it, nor would it have been judicious to have induced the patient to hold a long conversation.

I shall only give, in this place, the principal facts of the case, taken from that statement, which is a long one. At the early age of seven years, being then in the enjoyment of excellent health, after a long day's journey, and a great fit of childish passion in the morning, Mr. —— was suddenly attacked in the night with a choking sensation and dread of being smothered, which made it necessary for a medical man to sit up the whole night, during which there was constant convulsion present. Attacks like these became more and more frequent, and, while they lasted, great irritability of temper, bordering on violence, invariably prevailed. The difficulty of respiration, amounting to a dread of suffocation, came on gradually, and soon became a never-failing attendant of these attacks. Such was the tendency of the system to this complaint, that in the progress of years, whether pursuing the usual course of education, or afterwards enjoying the amusements of social life proper at a maturer age, on the slightest emotion, or sudden alarm, or bodily exertion, paroxysms of the disease would come on. The patient has scarcely ever been able, since the first attack, to go a journey of any length in a carriage, without having the asthma on the night following. In all the attacks it was found that if the patient could go to sleep, the distress and spasm of the lungs ceased, and he awoke better, although the difficulty of breathing often returned

unless he slept again. The earliest remedy tried, and followed by benefit, was an emetic, of which he took several; and the most recent remedy recommended, which he has unfortunately had occasion to repeat too often, is a glass of brandy. During the prevalence of the severest attacks, when pain of a very acute description prevails in the centre of the chest, and the gasping for breath is most awful, half a small tumbler of pure brandy, swallowed at once, will stop the paroxysm; and that quantity of spirits, which, under ordinary circumstances, would certainly intoxicate him, seems then scarcely to warm his stomach. So nervous is the patient become, and now and then so low spirited, that he can at any time induce a fit of asthma by merely thinking of it.—Medical men have for the most part treated his complaint as arising from the stomach, and have prescribed every possible species of medicine for it, all of which he took most rigidly, but without the slightest benefit. During a course of mercury the asthmatic paroxysms were considerably diminished in number. Dr. Jephson, of Leamington, ordered the inhaling of some medicated vapours, and advised rubbing the chest with a yellowish ointment, but neither of these experiments were of use. Morison's pills, and quantities of other quack medicines, were had recourse to, when the remedies of the faculty proved ineffectual; but equally without effect. At uncertain periods all asthmatic symptoms would for some time subside entirely, and the patient remain perfectly well. In one of these intervals, a short time before I was consulted, Mr. —— had an attack of blood in the head while riding out, fell from his horse, and was picked up in a state of insensibility and convulsion, which lasted for a period of twenty-four hours. On that occasion he was bled, and had proper remedies given him. In the summer before, an attack somewhat similar, though much slighter, had seized him after a violent fit of coughing. Lastly, it is admitted that in general a great deal of wine had been drunk, and that until lately, when those remedies seemed to have become less efficacious, laudanum and morphine had been the most successful agents in keeping off the paroxysms of asthma.

Such are the outlines of this interesting case, and I wish I could add that they presented a sufficient ground for the hope of a recovery. But the complication of an apoplectic tendency with the asthma rendered such a consummation nearly impracticable. On the very next day to that on which I had first seen the patient, he was seized simultaneously with spasm in the chest, wheezing asthma, and congestion of blood in the head, which rendered him insensible, and placed him in great danger. Under these circumstances I ordered a free depletion of the blood-vessels, and applied the ammoniated counter-irritant to the chest, as well as to the upper part of the spine. He was not long in recovering his senses, and in losing his asthmatic symptoms, under the joint effect of the means employed; and we had reason to congratulate ourselves that we had such means at command, considering the imminent danger in which the

patient was placed. After this attack Mr. —— continued free from all complaint for some days, during which he was able to go out during several hours of the day, and attended to his affairs without inconvenience. But as it was desirable that he should not remain longer than it was absolutely necessary in London, and as no cheering expectations were held out to him beyond that of a present temporary relief, by the occasional employment of the ammoniated lotion (his more perfect recovery from the pectoral disease requiring the protracted use of the prussic acid taken internally), he soon returned into Yorkshire, from whence he addressed me a letter after a few days, stating that he was much better.

CASE XXIX.

Spasmodic Asthma, assuming the garb of Hay-fever.

Lady Emeline —— requested my attendance at the residence of her father, not far from my house, on the 16th of June, 1835, in consequence of having been suddenly seized, at two o'clock, on the night of the 14th, with an oppressive stridulous and spasmodic asthma. About three years before her ladyship had suffered from a similar complaint, which came on not long after her marriage, and lasted four months. While she remained in this country, no medical treatment seemed to do her any good. The disease accompanied her into Italy, where she was sent in hopes of a recovery, and where she gradually lost her asthma. For more than three years and a half after that period, up to the present, no attack of the same kind had been experienced. The attack under which her ladyship was now labouring had lasted four days, and she had passed three dreadful nights. It was accompanied by fever, dry lips, and burning eyes. As the paroxysms of the disease always occurred at night-time, towards two o'clock, and as her ladyship usually slept at a villa belonging to her father-in-law, four miles from London, I was requested to pass the night there, in order to be able to judge more correctly of the nature of the disease. On that occasion I witnessed two successive wheezing paroxysms, accompanied by pain in the muscles of the chest. A draught, containing three minims of prussic acid, was administered immediately, and an ammoniated counter-irritating lotion was applied to the spine, between the shoulders, by which the pain was quickly removed, and the respiration became generally relieved in a much shorter time than during any previous seizure of the sort. For three successive nights I watched the case in a similar manner,— the Hon. Mr. ——, the lady's husband, undertaking to apprise me if any attack came on; but the three nights were passed without any seizure, and I discontinued that species of attendance.

For the purpose of the present work I need not enter into the particulars of the more general plan of treatment, and of the means adopted to ascertain the true nature and extent of the complaint,— which, whether we consider the season of the year, or the manner of

its seizure, resembled much what has been called *hay-fever*. My object in this place is to show that the counter-irritant answered our expectation in the present case, as it had on many previous occasions. It is sufficient to say that Lady Emeline was not long in shaking off her complaint, and in recovering that tranquil state of health which enabled her soon to add another flower to the poetical wreath she has intwined around her fair name, much to the credit of the female aristocracy of this country.

CASE XXX.

Stridulous and convulsive respiration, accompanied by pain, during an attack of pulmonic disease.

Madame ——, a foreign lady, aged forty-five years, residing in the family of a distinguished naval officer, of a high rank, connected with the court, was attacked in the month of April, 1835, with what has been termed *peripneumonia notha*, or bastard inflammation of the lungs. For a few days previously she had suffered from rheumatic pains in various parts of the body, in consequence, as was supposed, of checked perspiration, caused by exposure to a draught, while waiting during a sudden shower, under a porch, for a carriage, after a long walk in warm weather. The difficulty of breathing was so great, and the pain in the chest, though obscure, was said to be so distressing, that bleeding had been had recourse to before I saw the patient. Although the general symptoms of the attack seemed somewhat alleviated by the measures adopted antecedent to my visit, I still found the patient hardly able to take in a moderate inspiration without being stopped by an expression of sudden pain, and by cough without expectoration. The lips were livid, and the forehead was bedewed with cold moisture. I sounded the chest to ascertain whether any effusion of serum had taken place, and satisfied myself that such was not the case. As to the pulse; no great assistance could be derived from it in forming a sound opinion; for it beat at all rates, and from the most wiry, up to the most thumping tone of vibration, in the course of two or three minutes. What appeared to produce a greater degree of anguish to Madame ——, in this state, was the excessive oppression she felt in the chest generally, coupled with a very short, and almost spasmodic respiration. It should be remarked that the blood abstracted exhibited no signs of inflammation.

There could not have been a more favourable case for the employment of an instantaneous counter-irritant than this. Every medical man would have deemed a blister, under such circumstances, the very ideal of a remedy of the moment, and would have looked to its beneficial effect, produced in six or seven hours, for a favourable solution of the painful state of the chest. I thought and felt just so; but being desirous of obtaining such a result in the shortest period of time possible, and knowing that I had it in my power to effect that purpose by means of an ammoniated counter-irritating lotion, I

directed it to be applied to the chest, of a sufficient strength to produce vesication. This was obtained in a little more time than seven minutes, when a most copious discharge of serum took place, from an accidental rupture of the cuticle, and the oppression, as well as the pain in the chest, disappeared. The recovery after that went on its regular course. This case strongly marks the great advantage of being able to produce an instantaneous blister.

CASE XXXI.

Spasmodic seizure at the chest, similar to the preceding, during an attack of influenza.

Lieutenant H——, of the — regiment of foot, about a year before he entered the army (1836) and while still residing in his father's house, was labouring under a severe attack of influenza, accompanied by fever, which at one time ran very high. He had been confined to his bed a few days, when suddenly one night he woke with a tremendous and overpowering weight upon his chest, gasping for breath, and endeavouring to call out for assistance. His mother, who had been watching in the adjoining room, was at his bedside in an instant; and finding him in the state just described, and learning from him that he was also then suffering from great pain under the breast-bone, she proposed to apply a compress over the chest, with an ammoniated lotion, which I had directed the previous day should be in readiness in case of a blister being required. This precaution had been rendered necessary, not only on account of what might be expected in a complaint of this kind, but also because the patient lived at the distance of two miles from London, and could not get immediate medical assistance if necessary. A compress, quite saturated with the liquid, was accordingly applied; and I learned the next day, from the mother of the patient, that the effect in relieving the oppressive symptoms was almost magical—so much so, that when she offered to remove the application after ten minutes, the patient, who had expressed in that time great delight at the sensations produced by it, requested it might be suffered to remain on until the compress was quite dry. He very soon afterwards recovered from the influenza, in a most satisfactory manner.

7.—Tetanic Affections.—*Trismus.*—Locked Jaw.

Under this head I have only one example of disease to offer, which has given way to the employment of an ammoniated instantaneous counter-irritant. But the case, though it be a solitary one (and I of course attach no more importance to it than ought to be attached to a single case), will be considered as one full of interest, if, as I believe it will do, it should lead to a more immediate and successful practice in the treatment of that dreadful affection, the "locked jaw."

I shall simply premise, for the information of such of my readers as are not conversant with the nature and danger of tetanic diseases,—which are most frequently the result of punctures or some other slight injury of the nerves, principally of the extremities,—that the proof of their acknowledged intractability is to be found in the multifarious lists of remedies that have been recommended and adopted, and again changed for others, in their treatment, especially as regards the locked jaw. To this very day the different nations of Europe, the most civilised even, are not agreed as to the best medicine for the cure of the latter complaint; and if we except another highly nervous disorder somewhat analogous to it, namely, *hydrophobia*, there is scarcely another disease respecting which medical men are less agreed in point of practice. Nor is their opinion of its nature and locality in the human organisation more settled; inasmuch as, in the greater number of instances of the disease, nothing particular has been discovered after death, either in the brain or any other organ. It is only in considering locked jaw as a disease of great danger, particularly in hot climates, or during summer in this country, that there is no difference of opinion among professional people. Under these circumstances it will be admitted, I trust, that, in the case about to be related, I was perfectly justified in trying, for the first time, the experiment hereafter detailed, for the cure of a severe attack of locked jaw; instead of floundering about in the dark, making successive trials with manifold remedies, the virtue of which was at best problematical.

CASE XXXII.

Locked jaw supervening after the infliction of a slight injury in the thumb.

Count M——, nephew to one of the Italian ministers at the Court of St. James's, and Secretary of Legation, residing in South Audley-street, while strapping his razor on the 16th of June, 1835, slightly wounded the ball of the left thumb, grazing the skin only, and causing a puncture rather than a cut, with the upper angle of the instrument, so minute, indeed, that with difficulty could the place be discerned. This occurred at about nine o'clock in the morning, and the Count paid no attention to the circumstance. At one o'clock P. M. pain manifested itself in the left hand and arm, which was not long in reaching the shoulder. It likewise descended along the left side of the body to the lower extremity, as far as the hollow, behind the knee. The patient, without being alarmed at this, mentioned it to a friend, then Envoy from the same foreign court to that of the Netherlands, at that time on leave in this country, who immediately started in search of me, and requested my professional attendance. Having heard all the particulars of the case, and examined the thumb, as well as the arm, without discovering any thing, or producing more pain by the pressure of my fingers in the direction of the nerves than already existed in the parts, I proceeded at once to the application of compresses,

with the antidynous lotion, to the wrist, the bend of the arm, the axilla, and the hollow of the knee. In all these points the pain was acute, but on the lotion being applied, and producing its usual burning sensation, the original pain subsided, or was not sensibly felt. Having thus far succeeded in obtaining relief, and finding the patient faint, pale, and dejected, with a feeble pulse, I ordered some strongly-stimulating pills, one to be taken every two hours till bedtime. In the evening I visited him at the embassy. He was then feverish, had found it difficult to keep down his dinner, and complained of weight in the back of the head and nape of the neck. A smart aperient was prescribed, to produce its effect in the morning.

On the 17th of June (the second day) the medicine ordered having had a proper result, it was remarked that the count did not seem to care for his breakfast. He had passed a night somewhat agitated, and rose with an intense headache, and some difficulty in swallowing the saliva. The countenance appeared very distressed; the muscles of the limbs of the left side felt more rigid than on the previous day, and those of the abdomen seemed sore to the touch, as well as somewhat contracted. I confess that at this conjuncture the possibility of a tetanic disease being about to develop itself, probably on the following day, flashed across my mind. The weather was unusually sultry, and my experience in the West Indies, while serving as a naval surgeon on that station in 1810, suggested to me the likelihood of an attack of locked jaw occurring on the third day from the accident—that being, generally, the period of the appearance of the disease, after either punctured or lacerated wounds of the extremities; except in very severe cases, when the locked jaw is almost immediate. This suspicion I deemed it my duty to communicate to the minister, who, after reflecting on the case, sent me a note, of which the following is a translation: "Wednesday, 17th of June, 2 P. M. I feel very uneasy since your report of the state of my nephew; and as he is entirely intrusted to me, I think that I ought to do for him even more than his own parents would do were they here. What should you say to a consultation with some surgeon of high reputation—your friend Mr. Earle for example? If you think that he ought to be sent for, pray let me know at what hour you could meet him."

Had the case been one enveloped in obscurity: one in which *surgical* anatomy is more useful than the anatomical knowledge of a physician; or one, in fine, for which I could have expected that any surgeon or other medical practitioner might possess better means of cure than were universally known,—I should not have considered the apprehension I experienced, of exciting alarm in the mind of the patient (with whose natural nervousness I was well acquainted) by a consultation, as of sufficient weight to deter me from having recourse to one. But the contrary was the case; and for such reasons I declined giving a positive answer, leaving it to the uncle to determine that point. In the mean while I kept up a constant counter-irritation, particularly on the thumb and wrist,

which were blistered by the applications and smarted considerably; while the internal pain was nearly altogether subdued. I scarcely need remark that the patient was visited several times in the day.

On the third day, Thursday, the 18th of June, every thing at my first visit seemed to promise well. The internal remedies prescribed, principally of the antispasmodic class, with alkalies and quinine, in the form of pills, had apparently induced an improved state of health, and the patient appeared in better spirits. Still the countenance denoted some inward distress, which seemed little in accordance with the patient's declaration, that he felt no pain at the time, and which, coupled with a sort of impediment that I fancied I detected in his speech, led me to give a very cautious opinion to the friends, as to what might yet happen. I remained some time with the patient, studying his symptoms further; as, independently of the natural interest I felt for him and his relations, the malady with which he was threatened, and to combat which I had begun and was prepared to follow up a plan somewhat new in practice, became an object of intense interest to myself. I had been in the room perhaps half an hour, when the left shoulder, the muscles of the throat, and those of the chest, of the same side, became rigid, as well as painful, the teeth chattered, a general rigour came on, with a strange rolling of the eyes, and the patient was presently convulsed, yet in the full possession of his senses. While a glass of hot brandy-and-water was preparing for him of sufficient strength, I applied the counter-irritating ammoniated embrocation to the shoulder and upper part of the spine for some minutes. This, and the hot stimulant, swallowed simultaneously, quelled the storm, and the patient expressed himself free from uneasiness, though he at the same time felt sore all over, and inclined to doze. In this state I left him, to attend to my other professional avocations of the day. While engaged in these, a special messenger sought me at another of my patient's, and placed in my hand the following note, written in Italian, by Count ——, the patient's friend, of which this is a translation:[1]

Thursday, half-after one o'clock.

"Dear Doctor,—A quarter of an hour after you left Count M——, he had a fresh and a most violent attack, accompanied by a new symptom, which has alarmed us all considerably—the rigidity of the lower jaw. Count D'——, the minister, who was present, feels extremely uneasy, and I am truly frightened. Pray do me the favour to come as soon as possible, to remedy, if in your power, the present mischief, and arrange as to what should be done hereafter.

"Yours truly, P——."

[1] The reader I trust will excuse this apparent prolixity of details; but the case and its result are too important to be despatched briefly; and moreover, it will be borne in mind that I do not wish to instruct my professional brethren, who have nothing to learn from me on this (or indeed any other) subject, but for the generality of readers, who must be fully informed of the facts, in order that they may understand the question.

On my arrival, the scene that presented itself was truly distressing. The patient seemed convulsed, more or less, generally, and his eyes rolled and stared; he could not utter a word, but emitted the noisy sounds of a dumb person, while the lower jaw was fixed, leaving the mouth somewhat open, so as to give to the countenance a frightful appearance. In this state it had been for nearly two hours. The upper and lower limbs were rigid, and so were the muscles of the throat and nape of the neck, though the latter was still moveable. A very small tea-spoonful of water was introduced into the mouth, but it dribbled out again. On being questioned if he was in pain, he made an affirmative sign. I instantly drenched two white pocket-handkerchiefs, folded up in the ordinary manner, with some of the strongest ammoniated antidynous embrocation, and covered with them the whole jaw and cheek, from the back part to the front of it, on both sides; while a third compress was placed very high up on the spine. Pressure was made on all with perseverance, when in a few minutes we had the satisfaction of seeing the jaw drop, and afterwards close by the spontaneous act of the patient. By the time the compresses were removed, the whole surface was enveloped in a secreting vesication.

This was the true end of the disease. No serious attack ever took place again; and although threatenings of it, either real or in the mere imagination of the affrighted young man, were frequent in the course of the three or four next days, they never reached any serious result. At the end of that time I recommended him to pass a few days at Richmond; on returning from which place he came to me, to report himself quite well. Nevertheless, from time to time, Count M—— experienced twitchings of pain in the original place in the thumb, and along the arm, which he invariably attacked by a small compress charged with the lotion.

This case was noticed in the diplomatic circles, and came to the knowledge of his late majesty, who was pleased to enquire into the particulars of it, as well as of the treatment, from Count D'——, the foreign minister alluded to, expressing at the same time a great interest in the case, as he witnessed many fatal instances of the disease in the West Indies. The uncle of the patient, as well as his friend, are yet in London; the latter having since been appointed to the official situation of the former. The patient himself has changed the English for another foreign mission, and is in the enjoyment of excellent health.

8. Nervous Headaches.

Who has not suffered at some period or other of his life from nervous headache? Can there be, of the minor ailments that afflict mankind, a more worrying and disabling indisposition? It is one for which the sufferer scarcely obtains even pity; one to which physicians seldom condescend to pay any attention, except as it may constitute a symptom of some other serious disease; one,

in fine, for the removal of which either a thousand remedies are propounded by officious acquaintances (as in the case of toothache), which are good for nought, or else none is recommended except patience. The main reason of all this is, that a nervous headache generally ends of itself in the course of twenty-four hours, including a night, during which most of the sufferers from it contrive to sleep over their pain; and that, therefore, unless a something be found to shorten very considerably even that limited measure of suffering, it is never likely that the majority of patients will submit to a regular succession of pills, and draughts, and drugs innumerable, however skilfully prescribed, for the removal of that which "to-morrow" will cure without them. I think one may venture to assert, that what are called "genuine nervous headaches" are as much the opprobrium of the medical art as gout is, or any other disease not yet sufficiently mastered by physicians; and that the man who shall establish on good evidence a claim to having shortened the duration of these headaches, by some simple and not injurious method, will deserve and obtain the thanks of the community. That many attempts have been made, from time to time, to accomplish so desirable an object, is a fact which the history of medicine vouches for, and which the domestic history of almost every family can assert. But have those attempts been of avail to the sufferers? If they had, we should not every day hear of the many persons of both sexes who suffer under that complaint. What is wished for, in the case of such headaches as are here referred to, is as easy and as ready a method of removing them as the dentist possesses, who, with the tooth, snatches the toothache also away. His cure is as rapid as it is effectual. Might not we hope to be equally rapid and effectual in the cure of nervous headaches, although there be nothing tangible to remove in their case?

We may find a tolerably presumptive proof that nervous headaches are generally prevalent, in the readiness with which every body seems to know what is meant by that term. It would, indeed, be impossible to define them very distinctly, even were it necessary to do so for the information of the reader; for a nervous headache may exist alone, and be its own creator; or it may be the consequence of another disease, through sympathy or continuity; or it may be allied to and mixed up with a bilious headache—another of the cephalic family of complaints well known to the vulgar. Well, then, how is it possible to state in plain language the way to discriminate between the one and the other, except by saying that a nervous headache is that which is neither a bilious headache, nor one arising from fulness of blood in the head?

Such a headache, then, if the reader can comprehend my meaning, is that which, by means of an instantaneous counter-irritant, I proposed to myself to disperse, as quickly as I have shown it possible to do in disorders of the nerves of a spasmodic character. Indeed, it may be asserted with confidence, that of the whole range of disorders mastered by the strong ammoniated combinations exter-

nally applied, none has shown itself more obedient to this agency than what is termed a nervous headache. I might in fact state freely, as well as truly, that if the beneficent action of ammoniated counter-irritants had not been forcibly and sufficiently pointed out in the cases of serious nervous disorders already enumerated, the result of my experience with those agents in the cure, or more properly speaking, in the *dispersion*, of nervous headaches, would alone warrant the conclusion that they are endowed with a power which no other external application possesses. But the most marvellous part of their history, in reference to the complaint under consideration, is the almost instantaneous mode in which they cure that complaint. It is not very unusual for me to see, among such patients as attend me in the morning at my house, labouring under a paroxysm of nervous headache, however acute, three out of four of them leave my study perfectly free from the disease, after a single application of an ammoniated counter-irritant, either to the temple or temples, the forehead, the nape of the neck, or behind the ears, according as the case may require. To this we must add the facility with which the patients themselves, who happen to be periodically subject to such a disorder, can apply the remedy, and immediately obtain relief, after one or two applications made by the medical practitioner in the first instance; so that all further attendance from him may be dispensed with.

These several assertions I shall proceed to substantiate by examples of nervous headache cured in the manner alluded to; and I shall only vary so far from the plan I have hitherto pursued, in narrating the medical cases in this volume, that I shall not give the cases in detail—inasmuch as the nature of the complaint admits of none; it being often as sudden in its coming on, as it is brief in duration.

CASE XXXIII.

A noble earl, not more conspicuous for his station in society—which he has, through a long career, enhanced by great public and private worth—than proverbially known for being at one time the victim of the severest form of nervous headache, has, on three or four different occasions within the last twenty years, been under my care for that complaint. No doubt existed in his case that the origin of the headache was to be found in a deranged state of the digestive organs, and the treatment therefore had invariably been directed to restore those organs to a healthy action by remedies, and still more so by strict diet. Yet the positive bodily pain in the head, during the paroxysm, maintained its ground, even while the treatment was in progress, and after the general disorder had greatly abated; nor could any prompt means be found to alleviate or disperse that pain, although most of the usual external applications generally recommended in such cases were resorted to for that purpose. It is to be understood, that during the paroxysm, which

would often last two and even three days, such was the degree of pain, that the patient could only live in some degree of ease by remaining confined to his bed, in a dark room, for the whole period. About a twelvemonth back I happened to be again the attending physician on his lordship, for an attack of disturbed digestion, accompanied by sympathetic and rheumatic pains in the lower extremities and across the pit of the stomach, as well as by swelling of the legs. Diet, simple but effective aperients, and the use of mineral waters, gradually and somewhat promptly restored the general health; but the tendency to headache remained, though it occurred now but rarely; and when it prevailed, the patient suffered agonies as keen as if his general health had not been restored. On one of these occasions, being the 24th of May, 1835, I happened to find his lordship so ill with it, that he would hardly allow me to open the shutters of the room, for the purpose of examining his tongue and his countenance. This was the first attack for nearly three months since I had been in attendance; and, according to former experience, my patient expected to be confined to his room by it for three days at least. Anxious to relieve him from so much suffering, I brought to his lordship's recollection my success in quickly subduing nervous headaches, by the application of ammoniated counter-irritants, in several of his own acquaintances, and in the case also of his own brother; and I begged to be allowed to use the same in his case. Permission being granted for the application, it was immediately carried into effect; and I have only to add a few words more, for the purpose of stating that the patient soon after got up to take his coffee with his family in the drawing-room, being then entirely free from headache—and that I so found him the next day.

CASE XXXIV.

The Right Honourable R—— ——, who at one time occupied a distinguished post in the councils of his sovereign, and, deservedly so, in the estimation of his countrymen, was and had all his life been subject to nervous headaches of the worst description, which disabled him from doing any business, and confined him for two or three days together, and sometimes longer, to his room. During my attendance on his lady, upwards of fifteen years ago, and also on his daughter, I had had ample opportunities of witnessing in this gentleman this species of nervous paroxysm of pain in the head; and lamented, in common with the rest of the faculty he had consulted, that art could offer no remedy but patience for such sufferings. Here, again, the stomach was at fault, and it must be admitted that the patient's diet was also at fault *vis-à-vis* his stomach. But even when both these defects had been set to rights, and reconciled by a proper treatment, the consecutive nervous suffering would still go on, and appear altogether unmitigated.

The frequency of these headaches had compelled him at last to

retire from the more active and conspicuous duties of public life, though not so entirely but that he would, when not disabled by his periodical enemy, which visited him two and sometimes three times a month, attend in his place in the house of commons. On one occasion (1830), it became particularly desirable that he should attend, in consequence of an expected division of great importance, —one of those powerful struggles, or trials of strength, which occurred in the hot days of approaching reform. A single vote was then of importance; yet that vote my patient felt perfectly incapable of going down to give, in consequence of labouring at the time under one of his worse paroxysms of nervous headache. I had often suggested to him, when under similar visitations, to make trial of the antidynous lotion of which he had heard; but he had always resisted it, under the apprehension of having a blister. On the occasion alluded to, however, the urgency of the political interest at stake, and the anxiety of his political friends, induced him to forego all such apprehensions; and accordingly I received, at two o'clock in the afternoon, from Grosvenor square, the following summons:—"Mr. ——— acquaints Dr. Granville, that the access of pain in the head is bad enough to make him wish to try the experiment, if Dr. Granville happens to be disengaged, and can call upon him immediately." At four o'clock I was with him in his dark room, where he was lying suffering to a degree scarcely to be described. I applied a compress on both temples, saturated with a moderately strong ammoniated counter-irritant. In three minutes and a half the pain had considerably abated in front and over the eye, but the back part of the head was still suffering. I next laid a compress on the nape of the neck, and in five minutes the pain was equally dislodged from that quarter. At five o'clock of the same afternoon, Mr. R—— —— mounted his horse, and went down to the House, and was present at a very late division, without suffering any inconvenience.

CASE XXXV.

The lady of a wealthy baronet, member for one of the western counties, had been, during the space of three or four years, labouring under a severe affection of the mesentery, which had induced considerable atrophy of the body and general weakness. For this complaint my attendance was required, and in the course of three months, by dint of the strictest diet, and some trifling alteratives, the general health, and withal the appetite and the power of digesting food, were restored (1833). Along with the general derangement of the system, however, which had existed before, there had always been present a great tendency to acute nervous headaches, not manifestly dependent on, nor influenced by, to any great degree, the varying condition of the digestive organs. These I proposed to cure by ammoniated lotions, and the result of them was to the utmost degree successful. Not only was the first headache for which they

were made use of instantly relieved, but every succeeding attempt of the complaint to return was as instantaneously checked, by the same means, resorted to by the patient herself,—until at last a headache of the same sort became in her ladyship's case a rare occurrence.

CASE XXXVI.

Such was the confidence which the patient mentioned in the preceding case acquired, in the virtues of the ammoniated embrocations for the cure of nervous headaches, that she undertook to treat, with their aid, all such cases as came within her reach, either in her own family or among her friends. The first trial she made was with Miss ——, her daughter's governess, who from close attention to her duties, and equally close confinement, had made herself liable to frequent paroxysms of nervous headache, principally in the temples. In one of these Lady —— applied the ammoniated lotion I had prescribed for her general use, and in three minutes the headache was dispersed, though a blister was formed at the same time.

CASE XXXVII.

The success in the one case induced the same lady to recommend the ammoniated lotion to a friend who was staying on a visit at her house in town in 1833, and who, after having prepared herself one day for the drawing room at St. James's, found herself so ill, from a severe nervous headache which came on after an hour's toilet under the hands of Isidore, that she had decided on foregoing the pleasure of appearing at court. However, her hostess prevailed on her to try the effect of a small compress on each temple, saturated with a counter-irritant lotion, as in that place the plat of hair as worn in modern days, would conceal any redness or slight vesication which might follow the application. Mrs. P——, the sufferer, consented, and the result was of the most satisfactory description. The headache disappeared and no vesication followed. Lady —— has very lately assured me, that while residing in the country, in a populous district in Devonshire, she has often had occasion to test the power of the ammoniated counter-irritants in nervous headache, and that the application has always maintained its character, as being the quickest and surest mode of curing that disorder.

CASE XXXVIII.

Miss V—— P——, since married, was attacked one day (21st of May, 1830,) with a most intense, and as she called it, intolerable nervous headache, which had lasted a whole day when my attendance was required. The eyebrows were the principal seat of the pain, but even the eye-balls, when pressed by the finger, felt sore. She could neither bear daylight nor candlelight. I applied at once

a large compress with an ammoniated lotion on the nape of the neck, and kept it on for nine minutes and a half, without the slightest appearance of a blister. At the expiration of that time the headache was completely gone, and did not return.

CASE XXXIX.

A young woman aged 15, servant to a lady whose case of lumbago, cured by an ammoniated application, will be detailed hereafter, was subject to acute and frequent headaches, which disabled her from doing any work. She used to awake with it, and on that day she seldom could leave her room. The pains, at times, were so acute, that it seemed for a moment to affect her senses, and her mistress used to notice that she gave occasional unapt and incoherent answers when labouring under a severe paroxysm of the complaint. Encouraged by my recommendation of the ammoniated lotions, as the means best calculated to disperse quickly and effectually all nervous headaches, and also bearing in mind the example of her own recovery from an attack of lumbago, Mrs. R—— treated her maid Eliza Grantham in the same manner, whenever she was afflicted by headache, and on each occasion put a stop to it at once by the counter-irritating application.

CASE XL.

Mrs. Applegarth, of York street, Bryantson square, after the death of her husband,—whom she had incessantly attended during a protracted illness, which ended in consumption,—became seriously indisposed, and suffered, among other distressing symptoms, from intense nervous headache, principally situated at the top of the head, and occasionally extending to the ball of the eyes. I have repeatedly seen her in attacks of this kind, in the course of the last three years; and on each occasion the headache, which, when left to itself always lasted upwards of twenty-four hours, was entirely removed within scarcely as many minutes by the ammoniated counter-irritant.

9.—Odontalgia, or highly painful Toothache.

This complaint (for it is one notwithstanding its homeliness) is too well known to require any preliminary remarks. I observed in another place that almost every body thinks himself in the possession of a sure remedy against toothache, which he will recommend to others, though he take care not to use it himself. There is not another complaint in the whole catalogue that calls forth with greater certainty the spontaneous offer of an infallible specific from an officious friend. Henri Quatre, in one of his joyous moods, laid a wager with a favourite courtier, that he would, in the course of

two hours, convict almost every one connected with the court of quackery. He tied up his cheek in a scarf, and held a pocket handkerchief to his mouth; and in this state he appeared in the royal apartment, to receive his courtiers, or wandered through the long and frequented galleries of his palace. Every one who had the honour to approach the Bearnois king, enquired about his health, and immediately propounded a specific for the pain under which the sovereign was supposed to be labouring; and thus, in the course of two hours, his majesty collected fifty receipts for the complaint for which I am about to offer only one, and gained his wager.

Now the toothache with which I have to deal in this place, is that which mainly depends on the exposure of the nerve, proper to each tooth, to the action of cold air, cold drink, or accidental violence. It presupposes a carious, or decayed tooth; but the latter state of the tooth is not absolutely indispensable to the production of pain in the nerve. Again, the toothache I allude to, as a purely nervous complaint, is not one of your ordinary affections of the teeth, which is of every day occurrence, and seems more inconvenient than particularly distressing. It is on the contrary a highly painful disorder, extending very often to the interior of the ear, up into the globe of the eyes, and into the head, or down the muscles of the neck, which it will sometimes crisp, or contract, as if many of the numerous branches of nerves were sympathetically affected at the same time.

Such a toothache as this is really deserving of the attention of the medical man, either as being connected with some other serious disorder of the system, or as being the produce of some cause, which, independently of the toothache, may go on exciting some more important complaint. It is also deserving of serious consideration, as a mere pain of the nerve of the tooth; since such a pain, being in itself a source of irritation, if the later be allowed to endure long, all the principal functions of the body will be inevitably disturbed. To discover, therefore, a simple external application that should instantaneously check the progress of the pain, under such circumstances, and ultimately cure it, was a problem requiring to be solved; and the external application which is capable of performing that duty will be found to be a moderately strong ammoniated or antidynous lotion. The process of treatment is as simple as the cure is immediate. I do not recollect a single example of a genuine toothache, such as I contemplate, in which having been consulted for some immediate relief (with a view to save a journey to the house of a dentist), and having recommended the application of a little of the ammoniated counter-irritant, either externally on the cheek corresponding with the pained tooth, or upon the tooth itself, —I was disappointed in the result. Out of all the examples of the complaint I have seen, most of which occurred at my morning consultations, I have selected four, because in them the intensity of the pain was violent, and also because, in two out of the four cases, the sufferers themselves chose to apply the remedy, simply from know-

ing that I was in the habit of recommending it. By such a selection I subject the remedy itself to the fairest trial of experience that could be devised.

CASE XLI.

A foreign lady of high rank, whom I had had the honour to accompany some years before to a distant country, in the capacity of physician, is the first subject whose case, of very acute odontalgia, I shall briefly relate. Whilst residing in this country she was twice affected by that complaint, in its severest form, within the space of three months; and I must add that I have seldom witnessed expressions of greater agony than in her case. "Pray do come this evening without fail, to Stanhope street, if you cannot dine with us; for the Countess —— is suffering dreadfully from faceache." Such was the message I received at noon on the 13th of April, 1832, from the sister-in-law of the patient, at whose house she was then on a visit. At half-after eight o'clock, P. M., I saw the sufferer, who had not been able to join the dinner-table, and was pacing one of the drawing-rooms, holding something warm to her right cheek, which was swollen, and highly painful to the touch. With difficulty she pronounced the few words required to express the intensity of her tortures; and on my attempting to open her mouth a little, with the handle of a spoon, in order to examine the state of the teeth of that side, the part was immediately thrown into a species of convulsive trembling. I collected enough, however, from her sister, to ascertain that one of the back teeth, if not two, was supposed to be decayed; although no visible marks of it existed on the surface of the teeth; and that in the then state of the parts, with so much inflammation and swelling of the cheek present, any attempt at extracting the tooth was by the best surgeon-dentist, who had been consulted, deemed impracticable. In default of every other relief, therefore, lancing the gum had been had recourse to; and this failing, laudanum enough to lull at first, and afterwards a stronger application of it to deaden the nerve of the tooth, had been used; but all to no effect. On the other hand it was next to impossible to foresee when the swelling might subside sufficiently to allow of the proposed extraction of the tooth. Here, then, we had the case of a patient suffering from a most agonising affection of the nerves, in which "time" alone was to be looked to for a prospect of ease. Such a case, therefore, was precisely the one in which it might be seen whether a local application, the power of which in controlling nervous pain had been fully proved under other circumstances, could not be made to afford that degree of relief which alone would be welcome to the patient—effectual if possible, but instantaneous at all events. A compress, saturated with an ammoniated lotion of ordinary strength, was consequently applied to the posterior half of the cheek, towards the ear and angle of the jaw. I prepared it so effectually, that at the expiration of half a minute, by the watch,

the external pain produced by it was so extensive, that the patient could not distinguish whether the toothache still continued. All doubts, however, were soon removed; for at the end of two minutes more, the compress being taken away, in consequence of its having produced a full blister, no pain of any sort was left behind in the tooth, but only the slight uneasiness which remains for a very short time in blisters of this sort. The following morning I learned, that the lady had slept profoundly throughout the night, and that the swelling having subsided, the teeth had been examined, when it was deemed unnecessary to have recourse to extraction.

This patient suffered no further attack of the same sort until July, 1832, when I was again desired to give my attendance in consequence of a very severe and sudden seizure of earache, on the same side of the head, brought on by exposure to a constant draught of wind blowing into the ear, from the open window of a close carriage, during a long airing. The pain extended soon after from within the ear to the tooth which had been formerly affected, and involved the same parts, previously concerned in the attack of odontalgia, in a general paroxysm of fever and suffering. The compresses with the lotion in this case were applied behind the ear as well as immediately in front of it; and as the cheek was not now swollen, so that the mouth could easily be opened, a small quantity of the same counter-irritant was conveyed by proper means to the painful tooth. This attack ceased altogether as rapidly as the former one; and I understand that at last a large decayed tooth was removed, but not until a long time after.

CASE XLII.

On the 19th of January, having received an invitation to dine a few miles out of town, with a nobleman whose lady I had then the honour of attending, as well as his only son,—I arrived a few minutes before the time appointed, when I found Viscountess —— in the drawing-room dressed for dinner, but suffering from such exquisite pain in one of the teeth of the lower jaw, on the left side of the face, that she was about to retire, intending not to join the family at dinner. The pain affected the ear, the whole cheek, and extended into the orbit of the eye. It had first come on soon after breakfast, and had not only continued, but had kept increasing in violence, during the period that had elapsed between the morning repast and dinner-time. Fortunately there was in the house a bottle of ammoniated counter-irritating lotion, which her ladyship kept in case of requiring an instantaneous blister for some sudden attack of inflammation, for which she might not be able to procure immediate medical aid at that distance from town; and I urged her to permit me to use it for the removal of her toothache; as I felt convinced that by that means she would yet be enabled to sit down to dinner with sufficient comfort. Upon her consenting, a compress, saturated with the lotion, was applied to the under part of

the lower jaw of the side affected, and kept in that position for a minute and a half by the watch—the intention being, if possible, to prevent the formation of a blister. The pain went away immediately, and her ladyship remained free from it that evening and all the rest of the night. When Lord ——, who, at that time, occupied a ministerial station of great importance, returned from town to dinner, he learned at one and the same time the history of his lady's acute sufferings for several hours during his absence, and the instantaneous cure of them immediately after my arrival.

CASE XLIII.

A lady, living as attendant and reader with a patient of mine much advanced in years, in the neighbourhood of Park lane, had heard me recommend, in the course of conversation, the application of a counter-irritating lotion, as an excellent and generally certain remedy for acute toothache. One day in the month of August, 1837, being herself attacked with that highly painful complaint, which had prevented her from sleeping for two nights, and had entirely taken away her inclination for food, she recollected my recommendation, and knowing that a small quantity of an ammoniated lotion, which had successfully served to remove a paroxysm of spasm in the back of Lady ——, with whom she was living, was still left in the house, proceeded to use it in the way she had seen me use it before. The result was that she stopped the pain in the tooth immediately. This occurred during my short temporary absence from town. On my return, Mrs. G——d not only informed me of this fact, but also that she had cured in the same manner, and of a similar highly painful attack of toothache, the cook and two servant-maids in the house.

CASE XLIV.

A young lady, formerly governess to my eldest daughter, was staying on a visit at my house in April last, when, after an accidental exposure to one of those dreadful cold easterly winds which had so greatly prevailed during the winter, she was one morning seized with a most excruciating pain in one of her teeth in the upper jaw, which kept increasing during the day, and kept her awake the whole of the night. On the following morning, unable to bear the pain any longer, she meditated proceeding to some dentist, to have the tooth removed, as she knew it to be partly decayed. She was, however, prevented from doing it by the ladies of the family, who suggested the use of the ammoniated lotion, with the virtues of which they were all well acquainted. A bottle of one of those applications was consequently procured from my room, and a small quantity conveyed to the affected tooth and surrounding gum. The toothache almost immediately ceased. Threatening, however, to return in the evening, the application was

repeated, externally as well as internally, when all further suffering was suspended, and to this moment no fresh attack of toothache has taken place.

SECTION II.

CASES IN WHICH THE MUSCULAR SYSTEM AND THE TENDINOUS TISSUES WERE PRINCIPALLY AFFECTED.

1. Rheumatism. { Acute. / Chronic.

It is not my intention to enter into a disquisition on the nature and locality of what has been generally denominated rheumatism; neither is it required in a work like the present that I should do more than simply state what I mean by rheumatism, while I propose to bring forward cases of that disease in which counter-irritation has been employed as a means of recovery. Most of my readers know—some of them very probably from sad experience—that there is a peculiar affection of the joints, large as well as small, which is attended with pain more or less acute, often accompanied by swelling, by increased temperature, by tension of the skin, by redness, by throbbing, and by an exaggerated sensibility of the part. General fever is the concomitant in such cases; and the disease, which will often come on unexpectedly after the development of particular causes, will proceed through its various stages, like other febrile, eruptive, or pyretic complaints, in the course of seven, fourteen, or more days, and subside like them, after a well-marked crisis, either through the pores of the skin, or the secreting action of the kidneys. This is an ordinary description of what is called acute rheumatism. That it is painful, and oftentimes dangerous—that it requires the best skill and attention of the physician—and that it puts to the test the utmost resignation and forbearance of the patient—it is needless to state. The most serious consequences will often result from such a complaint; and one of them, and that not least to be deprecated, is the liability it generates of a return—which, if frequently repeated, and the disorder does not in the mean while prove destructive to the patient, induces an almost permanent morbid condition of the parts. Then the disorder obtains the common appellation of chronic rheumatism.

As I have before remarked, this is the simplest as well as the most superficial outline I can venture to put forward in such a work as the present, of rheumatic complaints,—as they are termed in common parlance; but I am aware that, even in so simple a description as the preceding, I have embraced many symptoms which do not always make their appearance, either together, or in the order in which I have placed them. Hardly two cases of rheu-

matism can be found in practice, which shall be precisely alike. Some, for example, are accompanied by more, and some by less fever; while others again scarcely exhibit any febrile movement at all. In some instances the pain is fixed to one or more joints, and the attack ceases without affecting any other; whereas in other instances the pain will invade every joint, shifting from one to the other, and leaving none untouched before the complaint wholly subsides. On the other hand, cases will be met with in which the pain does not occupy the joints, but only the large and long muscles in the body, no matter where situated; so that it would be an error to say that rheumatism is essentially an articular disease. Again, redness of the skin, with increased temperature, generally marks the seat of the disorder: but it also not unfrequently happens that the swelling (equally painful) is of the natural colour of the skin, though shining; and the external heat is hardly to be distinguished from that of the surrounding parts, although the patient himself be sensible of an increased temperature within the diseased joint. In fact, to attempt to describe, in one general sketch, all the varieties under which rheumatism presents itself to the notice of the physician in extensive practice,—and especially to do so in a work written for popular, and not for professional readers,—would be to attempt that which no medical author has as yet been able to accomplish.

With these few preliminary observations, therefore, on the subject of acute and chronic rheumatism, I proceed in my task of medical historian, and shall lay before my readers the narrative of such cases of the complaint in question as have, or have not, been benefited by external treatment founded on counter-irritation; stating at once, and once for all, that in almost all the cases of acute rheumatism, and in a few of the chronic attacks in which I have used any of the ammoniated counter-irritants, the pain has been very quickly relieved, and the recovery of the patient materially hastened.

CASE XLV.

Acute Rheumatism, the pain shifting from one joint to another.

This was the case of a lady residing at Highbury Grove, Islington, who was attacked with acute rheumatism, four weeks and three days after her confinement, in consequence of exposure to a cold and damp atmosphere, on the day she went out of her house to be "churched." I did not see the patient for two days after the attack; as it was hoped that rest, and the promotion of perspiration, would soon remove the complaint. The lady was at the time nursing. Upon the joints of the shoulders, elbows, and wrists, however, becoming permanently more painful, and the parts swelling, I was desired to pay a visit to the patient, at which I prescribed the usual remedies employed in such cases. It was hoped that the disorder would not exceed two or three days, as the pulse and other symptoms seemed to indicate a mild form of acute rheumatism. At

the same time I left directions that if the pain in the joints already affected increased, or if it shifted suddenly to another part, an ammoniated counter-irritating lotion should instantly be applied to such parts, with a view of quickly extinguishing the pain. It appears from my notes taken at the time, that even the moderate pain then existing had affected the milk, and had consequently disturbed the health of the child. This occurred on Wednesday, the 4th of August, 1830. On the succeeding Friday I received the following written message, as I had been prevented from driving out to Islington the day before to see my patient: "The pain I was complaining of when you saw me, still continuing very severe, and being rather on the increase, and it having yesterday communicated itself to my hip and knee, as well as to my shoulder again, I have been unable to lie down in bed all night; for whenever I attempted so to do, the pain was so violent that I could not draw my breath at all, and it seemed to shoot from the hip to the shoulder, through my breast. This being the case, Mr. —— (her husband) considered it advisable to follow your direction, and applied the counter-irritating lotion by means of a compress, first to the hip-joint, next to the shoulder, and lastly to the knee; on all which places it was suffered to remain pressed down by the hand, from three to five minutes. At the expiration of that time the pain had quite vanished, and I could breathe freely. On the hip it has left a slight blister, which teases me, and I shall therefore be obliged to you to call at your earliest convenience. But I am too thankful, even with it, to have got rid of my torments so quickly, and at so cheap a rate," &c. &c.

CASE XLVI.

Acute Rheumatism of the right thigh, from the hip downwards.

Macintosh, a man-servant of a particular friend of mine, residing at Stanley Grove, had been for several days in August, 1830, labouring under a most excruciating rheumatic pain, from the right hip down to the calf of the right leg, which had induced fever, sleeplessness, and a total want of appetite. This person had been addicted to free drinking, and had injured his health to such a degree, that consumption followed, which in a year or two after the period here alluded to, caused his death. On the occasion in question, it being essential that he should, as soon as possible, be made fit for duty, and freed from the acute pain under which he was suffering, a large compress, saturated with a moderately strong ammoniated counter-irritant, was applied to the hip, and a smaller one to the knee, in both which places they were retained by bandages until they were dry. At the end of a quarter of an hour there was found a blister on the hip, but none on the knee, and no more pain existed. The patient, who for three days had been hardly able to walk from the outer offices to the house with the view of being examined by me, walked up to town two days afterwards, to thank me for his recovery.

CASE XLVII.

Acute Rheumatism in the arm.

The gentleman alluded to as being the master of the patient mentioned in the preceding case, was attacked with a rheumatic pain in the arm, in the first week of November, 1830. On the 12th of that month his lady, who had witnessed the immediate recovery of Macintosh, wrote to me to request I would desire the chemist to send her a proper ammoniated counter-irritating lotion (which she styled invaluable), with a view of applying it to the arm of Mr. ——, for the removal of his rheumatism. The request being complied with, the lotion was applied, and the pain immediately removed.

The same gentleman, writing to me on the 26th of June, 1835, from Scotland, where he was staying on a visit to a noble earl, well known as a most efficient promoter of the fine arts, announced, in the following brief lines, another instance of the efficacy of the ammoniated or antidynous lotion, in curing rheumatism, at the same time that it had proved inefficacious in organic tic douloureux: "I wish I could tell you that the prescription of your counter-irritating lotion had been of use to Lord ——, by alleviating his dreadful sufferings from tic; but as it has just cured him of an *attack of rheumatism*, I hope he may derive further benefit from it," &c. Whether the nobleman here alluded to did or did not derive any benefit from the counter-irritant proposed, I never made it my business to enquire, as his lordship was not my patient. From the knowledge I had of the nature of his case, considering the attacks of tic douloureux to be dependent on organic mischief, I could not expect, nor have I in any other similar case anticipated, any material or permanent advantage from the employment of a counter-irritant.

CASE XLVIII.

Acute Rheumatism of the left knee.

The husband of the woman who kept the first lodge at Nocton, where I was staying on a professional visit to its noble proprietor, in October, 1833, was attacked with acute rheumatism in the left knee, which in the course of twenty-four hours swelled to a considerable degree in the inside, and became so painful, that he neither could lift up the leg, nor allow it to be touched for the purpose of its being lifted off the bed, without suffering excruciating tortures. Having found him in this state, when I visited him immediately after I had been apprised of the case, and observing that considerable febrile disturbance of the system prevailed at the same time, I ordered some calomel, with opium, and James's powder, at bedtime, and a diaphoretic mixture throughout the night, as well as an effectual aperient draught in the morning. The constitution and make of the patient appeared very robust. Before the evening had

arrived, the pain had become considerably worse. On the following morning, the medicine having produced all the effect that could be desired, the attack, particularly the pain of it, seemed to have subsided. There was but little fever left, and the general surface of the body was in a state of complete perspiration. The affected leg, nevertheless, continued exquisitely tender to the touch, the knee still swollen on both sides, and the part felt to the touch as if within there was fluctuation. The diaphoretic mixture was ordered to be repeated through the day; but in the afternoon the patient got again much worse with regard to local suffering, and my attendance was consequently requested. Thinking it important to endeavour to stop the pain at once, and thus secure to the poor fellow a quiet night; and on the other hand, knowing that unless the increasing irritation kept up by the painful affection of the knee-joint was abated, rheumatic fever would be set up, and the case become troublesome, I at once enveloped the knee in a large compress saturated with an ammoniated counter-irritant, and determined on leaving it on all night, tied down by a suitable bandage. I remained with the patient during the first ten or fifteen minutes of the application, which smarted greatly, and made the patient exclaim, that he felt "as if the knee was on fire." After the first five minutes had elapsed, he begged to have the application removed, and would have torn it off, had it not been well secured; but at the expiration of a quarter of an hour, not only had the painful sensation produced by the lotion nearly ceased, but the rheumatic pain also; and I understood afterwards that both ceased altogether before eight o'clock in the evening, when the patient fell into a profound sleep, and passed a quiet night.

Next morning he was surprised to find that he could move his limb, and when I visited him after breakfast, I found him in his little parlour, having walked down stairs from his bedroom without pain or inconvenience. On examining the part, a very large bladder, yet intact, containing a prodigious quantity of serum, was found to surround the sides and back part of the knee. This vesication broke in the course of the day, and the blister continued to run the whole of that day and the next, when it dried up, and the patient resumed his labours, perfectly recovered. Thus in forty-eight hours a very formidable attack of acute rheumatism in so delicate a part as the knee was put an end to.

CASE XLIX.

Chronic Rheumatism (Sciatica) of the left thigh.

The Rev. ——, chaplain to one of the principal foreign embassies in London, of robust constitution, but subject to regular attacks of gout, to lumbago also, and to rheumatism, aged seventy years and upwards, requested my attendence on the evening of the 2d of October, 1830, in consequence of an attack of excruciating pain, beginning in the sciatic notch, and extending along the sciatic nerve

of the left thigh. He was not in any other respect unwell; but he suffered so much from pain, that he could not sleep at night, neither could he walk in the day without the help of a crutch. On the day I saw him, and the following, some of the usual remedies prescribed in such cases were ordered, without however alleviating the pain in the smallest degree. An ammoniated counter-irritant was at last applied, and the pain went away in half an hour; so that not only could the Rev. ——, move the limb freely after that time without the slightest uneasiness, but he was able to walk without the crutch. The pain never returned.

CASE L.

Chronic and wandering Rheumatic affection throughout the body.

J. K——, Esq., residing, in the year 1832, in Grosvenor street, had been subject for some years to acute, short, and piercing pains, in almost every part of the body, particularly the limbs, their several articulations, and at times in the muscles of the head, the chest, the back, and the abdomen, upon the slightest exposure to damp air. These several places were, on some days, when he laboured under the severest form of his attacks, visited all in succession; but very seldom indeed any two or three of them together. There was no fever at the time, nor swelling of the part, but tenderness when it was touched. The frequency of these attacks, and the length of time during which the pains lasted, without sensible mitigation from any remedy that had been suggested, had induced such a state of irritability in the system, that Mr. K—— was become what is termed a "nervous subject," and he had lost flesh considerably. Having heard from a friend, whom I had relieved of rheumatic pain by an ammoniated lotion, of the decided beneficial effects it had had upon him, Mr. K—— applied to me for advice. I did not hesitate a moment, after hearing his statement, to recommend the application of the same external remedy, wherever he suffered pain; and in three days I had the satisfaction of seeing him again at my house, to report not only that he was himself completely cured of his pains, but that he wished to try the same remedy on his mother, who had laboured for some weeks under nearly similar symptoms. In due time I learned that this lady, like her son, had found an immediate and effectual relief, in the external application recommended.

CASE LI.

Chronic Rheumatism in a lady, mistaken for an inflammation of the left ovarium.

This is an important case, because the symptoms of rheumatism were so doubtful, owing to the peculiar seat of the pain, that an eminent physician accoucheur, one of the leading surgeons of the day, and myself, were all equally mistaken as to the real nature of

the affection, and decided at last that it must be an attack of slow and insidious inflammation of the ovarium on the left side. The lower portion of the abdominal muscles on that side, those of the inguinal region, and those which cover the edge of the hip-bone and its outward face, were all tender, and at times exquisitely painful. Immediately within the cavity of the iliac region the young lady could not bear any pressure; and when asked a question to that effect, she admitted that she always felt a throbbing in that part. This affection had crept on gradually, and had lasted some months before I saw the patient, who was distantly related to one of the leading political characters of the day. Though naturally a handsome person, and still a young woman, she was already reduced to a pitiable state, not only of emaciation, but in appearance also. She could not keep any other than the horizontal posture. After two years passed in this manner, visited during the few months she passed in town at her sister's in Cumberland place by her medical attendants, it occurred to me (who had, at last, been left in sole charge of the case,) that the nature of the disorder might, after all, be of a rheumatic character. I was led to this conclusion from having noticed that, occasionally, the patient was attacked by decided rheumatic affection in the hip of the opposite side, which would shift sometimes to the shoulders, sometimes to the knee of the same side; and that during such attacks the original pain in the left and lower side of the abdomen was either not felt or was completely suspended. As we had in the mean time run pretty nearly through the entire pharmacopœia, in the vain expectation of affording relief, I now proposed to try the effect of an ammoniated counter-irritant, of a suitable strength—or as I termed it to the lady, of the blistering lotion—my intention being that it should produce blisters; and this I offered as a *dernière ressource;* being convinced in my own mind that the case was incurable, but might be relieved. The effect was such as I anticipated. The lotion produced notable relief; so much so, that the patient ventured, at about the middle of July, 1831, again to return into Suffolk, where she was to continue the external application as before, in hopes of conquering at last the habit of pain, if I may use such an expression, and whence she addressed to me the following note on the 2d of August:

"I bore the journey very tolerably; but for the first few days afterwards I felt excessively fatigued, and the swelling in the old place and the leg gave me a good deal of pain. For the last two days I have tried the lotion again, and the pain under its action is subsiding. I imagine that the sea-air makes my skin tougher than ever, as I cannot get the lotion to have the effect of making the least blister under half an hour; nor can I keep them open when made. I have had two, and they heal in a very few hours. But although that is the case, yet I think they *have relieved the pain very much.*"

This case never went beyond relief.

CASE LII.

Chronic Rheumatism of five years' standing, affecting the knees, the ankles, the wrists, and the elbows, and producing a complete stiffening of those joints.

My only motive for bringing forward this most lamentable example of a highly-painful disorder, is to show that even such powerful agents as the ammoniated counter-irritants habitually recommended by me, can make but little impression on them. In this case a lady, connected by marriage with the aristocratic class of society, had contracted an articular rheumatic affection, by frequent exposure on damp ground to misty and damp atmospheres,—sometimes, indeed, during the prevalence of rain,—in the pursuit of the innocent recreation of gardening, which was followed up with a perseverance that nothing could interrupt. Disease at last put a stop to such occupations, and from the first moment of the rheumatic affection appearing in the knees, to the time of my being consulted, Mrs. H— D— had passed five years in undiminished sufferings. The disease, at first, affected only one side; but in an evil hours he listened to the advice of some person evidently unacquainted with the real nature of the thermal springs of Aix-la-Chapelle, and proceeded thither to bathe in one of them, from whence she returned with the other side of the body affected, and the side previously diseased made still worse. From that moment every thing went on from bad to worse; until at last almost all the joints of the lower extremities, and some of those in the upper extremities, were reduced as near as possible to a state of immovability. On my examining the parts, I found them more or less disfigured by large swellings; they were tender to the touch, and could bear pressure indifferently. Some slight indication of motion might be obtained by coaxing and manœuvring, but none by the will, in the joints that were most affected. One or two of them, those of the wrist for example, would at times show a disposition to amendment and flexibility; and I recollect that especially after a very decisive and effectual treatment by internal medicines under my care, when I was first in attendence, such was the amendment that had taken place, that the patient had been able to use her hand and wrist in penning a letter or two, though with difficulty.

It is scarcely necessary to observe, after such a description, that Mrs. H— D— had not, for many months, been able to move or walk unaided: and it must be borne in mind also, that in consequence of a frequent recurrence of paroxysms of acute rheumatism, the evil results of that complaint (already manifested and fixed in so distressing a manner) were each time increased in intensity; every fresh attack of the *active* disorder superadding, as it were, a fresh load of its consequent inconveniences to its already existing *chronic* form.

Under these circumstances, I at one pronounced the impossibility of affording any real relief, or permanent improvement, in the power

of moving the joints, by the application of any external remedy,—except as an auxiliary to some general treatment of the active and acute disorder, with a view to check the pain of the limbs—which was invariably increased at each succeeding paroxysm. With this intention the ammoniated counter-irritants were applied, as vesicatories, by which large discharges of serum from the swelled parts in the wrists and knees, and a corresponding diminution of suffering or pain, were obtained. But beyond this, the local application, like many others which had been tried before, produced no very marked benefit; so that after a persevering trial of some weeks' duration, the treatment was abandoned.

I wish to make a single remark respecting another external application, which was tried with my consent, for a few days, at the desire of the patient's relatives, and on the faith of advertisements in the public journals. I allude to Lefay's pomatum. On the first day of rubbing this preparation on the left wrist, which was then very painful, and had kept the patient in a state of irritation all night, the pain was lulled, and at length gave way, when rest and sleep followed. The same results were obtained several times after, under nearly similar circumstances; and I felt satisfied, from what I saw and heard of the patient's state, that the preparation acted as a counter-irritant only (producing tingling, &c.), and not as a specific remedy, through absorption, or any alterative agency possessed by the ingredients. However, at the end of a fortnight, the pomatum ceased entirely to have any effect, as all other counter-irritants had done before; and as long as the patient remained in town I confined my professional attention to the general and constitutional symptoms, which I found to be better relieved by powdered colchicum, with Plummer's pill at night, and prussic acid during the day, than by any other remedial agent. The result of such treatment was the restoration of her general health before she left town, and the cessation of those frequent attacks of acute rheumatism to which she had been subject before, as well as for a short time after my first seeing her. Even in the cold month of November, 1835, writing from a much exposed place on the southeast coast of England, she informed me that "her health had kept perfectly good, but that there was no improvement in the rigidity of the joints, neither had they decreased in size to any notable degree. She slept well, and her appetite was good: her hands also had become a little stronger, for she could use her pen; but in other respects the character of her complaint continued much the same, though she had resumed and persevered in the use of the counter-irritating lotion." Towards the end of the letter the patient adds, that in some points the disorder seemed inclined to attack the shoulder, and the articulation of the neck. "I have occasionally," she states, "put Lefay's ointment to my neck and collar-bones, which has given abundant tingling, but produced no relief."

2.—Lumbago.

I have separated this painful affection from its kindred class of rheumatic complaints, because it is oftener the result of violent strains and sudden exertions of the muscles in and about the loins, than the produce of a constitutional malady. I have also so separated it, because the same internal treatment which will cure rheumatism will not benefit lumbago; while on the other hand the means which remove the latter would prove inefficient in eradicating the former. Lumbago also requires to be considered apart from general rheumatism, in consequence of its being always a muscular, and not an articular disease. In speaking thus of lumbago, I wish it to be understood that I do not refer to, or mean to take into consideration, that form of the disease which is called sympathetic, because it is supposed to depend either on indigestion or a foul state of the intestines—on gravel—or some other internal disorder. I simply look, in this place, to the two modifications of lumbago which prevail mostly; namely, the merely rheumatic, which is a spontaneous and direct affection of the muscles attached to or connected with the lumbar vertebræ; and the painful affection of the same muscles, which is the result of a sprain or violent exertion. Both are benefited, and their cure considerably expedited, by ammoniated counter-irritants.

Out of a great many examples of a speedy recovery from these two forms of the disease, due to the counter-irritants in question, I select only four, which I will detail briefly.

CASE LIII.

Severe Lumbago and Sciatica.

The butler of the Right Hon. Sir G—— ——, a tall, strong-made man, though spare of flesh, after enduring for several days the most acute pain in the loins, which had of late extended along the sciatic nerve, so as to involve in one accumulated mass of suffering the whole of the muscles of the loins, as well as the muscles covering the left iliac and sciatic region, and those of the upper and posterior part of the thigh (in consequence of which he had not been able, during that time, to move from his bed,) requested my attendence on Thursday night, the 11th of March, 1830—his agony having then become insufferable. The slightest movement augmented the pain to a degree scarcely to be credited, and induced nausea and shortness of breath. He had been subject to attacks of gout; of one of which he had indeed, at the time, something like an active indication in the great toe of the same side,—for it was red and rather painful.

For the present complaint every means to which medical art has recourse for its cure had been adopted, but without the smallest success. He had been treated generally as well as topically, yet without deriving even the most trifling alleviation of pain. Under

such circumstances I had no other resource to offer but the ammoniated counter-irritant,—which I applied myself, immediately to the sciatic notch, and a smaller compress also, with some of the same liquid diluted, to the inflamed toe. The applications were bandaged tightly on, and were to remain so all night. On the following day I learned that in twenty minutes from the time of my leaving the patient the lumbar and sciatic pain had completely ceased, and that he had slept all night. Vesication had taken place, and a very abundant discharge of an exceedingly excoriating serum had followed, in consequence of which the subsequent healing of the surface became somewhat troublesome and tedious. At this visit the patient assured me that he was quite well with the exception of the toe, which looked very red and swollen, and presented all the appearances of genuine gout. On the third day, Saturday, this as well as every symptom of sciatica, had disappeared, and the patient began to walk about the housekeeper's room. Eight years have elapsed since, and this person, who is still in the same service, has never experienced an attack of the same kind.

CASE LIV.

Lumbago consequent on exposure to cold and rain.

Mrs. R——, a lady about twenty-two years of age, susceptible of cold, and subject to inflammatory complaints, after a long drive from Barnet in the night of the 5th of July, 1835, in an open gig, during a storm of rain and wind, which blew all the way upon her back, was seized in the night with shivering, general soreness of the limbs, and fever, which induced her husband to call up a medical gentleman near him, in the vicinity of Bryanston square. In the morning, when this lady attempted to sit up in bed, she found it impracticable, and felt as if she were nailed down to the mattress. The slightest effort at a movement produced an agony of pain. In this manner the day was passed, during which the remedies prescribed had caused an abatement of the fever and general indisposition, but had made no impression on the local affection. At night the latter became much exasperated, notwithstanding the application of warm flannels and warm fomentations. Lying immovably flat on the back, which had hitherto been the only position of comparative comfort, became now irksome, and with some difficulty Mrs. R—— was turned on her right side. Cupping was proposed, and even bleeding at the arm, but the patient resisted both, and at the suggestion of her husband assented rather to my being sent for. The written message enabled me to go prepared with an ammoniated counter-irritant, in which I doubled the proportion of the strong *liquor ammoniæ* to the spirituous ingredients; and on my applying the same to the whole of the loins, pressing down the application by means of a long towel fastened round the body, the acute suffering ceased at the expiration of eleven minutes, according to the statement of the husband, who

held the watch. A partial vesication ensued almost immediately; but the patient, soon after I left the house, fell into a profund sleep, and the next morning was able to leave her bed, and come down stairs into the withdrawing room, where I found her.

CASE LV.

Genuine and inveterate Lumbago.

The patient just alluded to, feeling a considerable interest in the case of an elderly woman, Mrs. Taylor, aged sixty-six years, a retired housekeeper of the late Earl of Dudley, who had been bedridden at her lodgings in the Edgeware road for several weeks, from a very severe attack of lumbago, became anxious to extend to her the rapid and effectual benefit from the ammoniated lotion, which she had herself experienced in that complaint. Accordingly, on the 21st of August, 1835, Mrs. R—— wrote to request I would visit that patient on her account; and on my reporting that I thought the case was one which would yield to the same application, she determined upon using it herself for that purpose, and did so the same afternoon, in pursuance of my directions. The great wish of the poor patient was to get relieved of the local suffering, which she expressed to be exceedingly severe and incessant. As to the power of moving, she scarcely looked with any degree of sanguine expectation to that,—being at all seasons but a feeble subject. Her wish was gratified, as I learned on the following day, by the result of only one application of the counter-irritant; it however raised a blister which became exceedingly troublesome, owing to the application having been left on till the compress had got dry, and also owing to the infirm and morbid condition of the constitution of the old woman. I attended to the case myself after the first day,—being too happy to share in the work of charity towards a suffering fellow creature; and under my care the extensive ulcerated surface, exactly similar to what medical men will occasionally witness subsequently to the application of a common blister in some peculiar constitutions, healed in the course of a fortnight. Mrs. Taylor, however, long before that time, had regained the power of moving about, and was in the habit of sitting up in her chair during several hours of the day, entirely free from the muscular or lumbar affection.

CASES LVI. AND LVII.

The Author's own case of Lumbago.

In former years, and subsequently to my sojourning in the West Indies as a naval medical officer, I was subject to acute rheumatism, and to that form especially which affects the loins. So often have I suffered from the latter, that the part has become liable to an attack of the complaint in question, if I make but the slightest exertion, either in lifting weights, pulling up a tight boot, or riding a rough-trotting horse. During an attack of the disease, whether

spontaneous or accidental, the pain I experience is not very great, provided I keep the body still; but on attempting to rise from a seat, or to move when in bed, the suffering is very considerable; indeed so acute is it when I try to stand up, that it bends me double; and in that state alone can I walk, while under an attack. Formerly I treated these attacks by internal remedies and by cupping; and I shall never forget the expressions of delight I used to utter, when good old Mr. Mappleson, with *hocus-pocus* dexterity, implanted his exhausted glasses on the painful muscles, and drew them up with irresistible force within the cup, whereby my inward pain would instantly cease. But though momentarily relieved, I never found that the abstraction of blood from the part either permanently benefited me, or hastened the cure of the disease. In 1832 I was visited by a smart attack of spontaneous lumbago, as usual. This time I determined on trying, in my own case, what had so well succeeded in others; and therefore, after the first day of the disease, in which I thought it necessary to employ some general medicine, I put a large compress, with the ammoniated lotion, on the lumbar region, and passing a long towel round the waist, I effectually pressed it down for five minutes. The pain or smarting from the application was such that I missed the original pain at once; but even after the smarting subsided, the lumbago was no longer in existence. Heat and an intolerable itching of the part, during a few days after the application, were the only inconveniences I experienced.

About two years ago I incautiously lifted up a child four years old, stout and heavy,—stooping in the first instance to lay hold of him under his arms, and next rising up suddenly to toss him in the air. As if lightning had struck me in the lumbar vertebræ, a dreadfully acute pain shot through them inwardly, and I was obliged to give the child to another person—not daring to stoop again, and fearful of letting it fall. With difficulty, and much uneasiness, I walked out of the house, and got into the carriage to return home,—on reaching which, so decided an attack of lumbago had supervened, that I could hardly move when I tried to rise from my seat and descend the steps to the pavement. Bent nearly double, and suffering from much pain, I contrived to ascend the stairs to my bedroom, feeling as if I had the weight of the whole house on my back, and as tired in the lumbar muscles as if I had been undergoing the most extreme and lengthened bodily labour. On that evening I had a particular engagement out of doors, which I would not have broken on any consideration; yet to attempt to go in the state I then was would have been ridiculous, even if I could have borne the pain. I therefore determined to try the plan of counter-irritation, which had so well succeeded in the previous instance, and immediately applied the strongest ammoniated lotion I could procure, across the loins, in the same manner as before described. It was then past five o'clock, and I was, as I have already observed, bent double;—yet by seven o'clock I stood erect before the glass to

dress, and kept my engagement half an hour after, perfectly free from every species of pain, but feeling through the evening as if a blister was rising on the part; as proved to be the fact when I returned home.

3.—Swelled and highly painful Articulations not dependent on Rheumatism.

CASE LVIII.

Swelled articulation of the left knee from an accident.

Miss Catherine ——, the daughter of a clergyman residing in London, whose constitution is inclined to scrofulous disorders, hurt the cap of her left knee to such a degree, by an accidental fall, that at one time doubts were entertained whether or not that bone was fractured; and the question was left unsettled only in consequence of the rapid and excessive swelling which followed close upon the fall. The surgeon who first saw the patient (10th May, 1831), directed, among other proper measures, the application of a blister. Recollecting to have witnessed the power of the ammoniated counter-irritants in instantaneously raising a blister, when properly managed; at the same time that it allayed pain (of which she was then suffering greatly), the patient requested me to see her. After examining the parts affected, I agreed with her that the case was a proper one for testing the efficacy of the counter-irritants in question, and therefore I could not but encourage her to employ them. Accordingly a compress, saturated with an ammoniated liquid, was placed upon the prodigious swelling at either side of the knee, leaving the hollow behind, and the cap in front, quite free. In less than five minutes the whole interior of the knee joint was thrown, as it were, into a state of commotion. On removing the compresses, large patches of a full vesication appeared to have formed dusing that short period, and these were left intact. In the mean while the inward pain of the knee, and the excessive tenderness of the cap, had greatly subsided; and the swelling did the same by the end of the following day, when the blisters broke, and the large quantity of serum they contained was discharged. The compresses were repeated once every other day for a week; after which they were discontinued; the part seemingly having returned to its normal state, with the exception of some degree of weakness,—which continued for a short time longer.

CASE LIX.

Accidental injury of the knee, producing a painful and swelled state of the joint.

While I was staying for a few weeks at Nocton, in the autumn of 1832, the private secretary of the Earl of —— (now Sir Charles

D——), injured his knee very considerably, by hitting it against the stake of a style while out shooting. By the evening of the same day the knee had become so painful and stiff, that on getting up from dinner, and later still, upon going up to his room, he walked quite lame, and seemed to suffer much. I was requested to look at the knee (it was the right knee), when I found it considerably swollen, painful to the touch, very hot, and bearing marks of bruises on the inside, and all round the inner margin of the patella, or knee-cap. I applied immediately a rag with some of the ammoniated lotion. In five minutes it had produced a blister; but as my object was, if possible, to subdue the swelling at once, knowing well from experience, that if the swelling increased further, or continued long, even in its present state, it would be difficult to reduce it, I left the rag upon the part for the whole night. Next morning the swelling had completely subsided, the heat of the part was gone, as was also the soreness, except indeed when considerable pressure was made with the fingers on one or two spots of the inner edge of the knee-cap. There was also a large blister quite intact, and full of a fluid, which was partly gelatinous. This I let out, and the vesication was dressed as usual. In six days from the accident the knee got quite well, although the injury sustained by the soft parts, where the bruises had been received, proved so great as to cause a sloughing of them in the course of that time. To all appearance this accident, treated in the usual manner by leeches, and some cold evaporating lotion, would have proved long, tedious, and troublesome.

CASE LX.

Painful strain of the knee from violent exercise.

Captain R——s, of the Royal Navy, was enjoying, with myself, the hospitality of Mrs. Lawrence, at her magnificent seat, Studley, in September, 1830; when, after two days' shooting on the moors, in the course of which he walked over several miles of ground, one of his knees became stiff, hot, and highly painful, and he was soon disabled from again joining in that sport. Captain R—— had annually been subject to precisely the same affection, and from the same cause, on the first days of the sport; and on each occasion the inflammation of the knees had run very high,—as it threatened indeed to do in the present instance. Before bedtime of the same day the part had swollen considerably, the knee looking twice its natural size. The skin was tense, but on pressure one might fancy that a large quantity of fluid was collected within. There was no visible discoloration of the part, the temperature was several degrees higher than natural, and the joints felt so stiff as well as painful, that the patient could not attempt the slightest movement without crying out. I shall now quote the notes I took of the case at the time—premising that, being aware, from previous experience (Cases LVIII. and LIX.), how speedily such accidental

inflammatory affections of the joints, particularly of the knee, gave way to the ammoniated counter-irritant, I proposed to the captain to treat his case with that preparation; to which he had assented.

"October 7, I applied twice to the knee of Captain R——, which was hot, painful, much swelled, and prevented him from walking, an antidynous lotion, and left it on for three minutes, after which the rag, still damp, was replaced and suffered to remain. It improved the part, took off a large proportion of the heat in it, but raised no blister, nor affected the pain. I repeated this morning (Oct. 8) the application. It occasioned much more smarting than before, but excited no blister, and scarcely touched the pain. In the evening, however, the knee was quieter, considerably reduced in size, so as to appear almost natural, and its temperature lowered to the proper standard. Captain R—— seems quite astonished at the total freedom from any uneasiness in the part, which he has attained in so short a time. He states that on a former occasion, the knee, having become similarly affected from the same cause, while on a visit to his relative at Studley, he was confined by it during a fortnight, under the ordinary treatment.

"Oct. 9. The captain's knee is so perfectly well that he escorted me on foot through the various mazes of this enchanting spot," &c.

SECTION III.

CASES IN WHICH THE CIRCULATION IS PRINCIPALLY AFFECTED.

We have hitherto ranged over the principal and most important disorders of the human frame, affecting the nervous, the muscular, and the tendinous system, which the plan of external treatment I am advocating has fully succeeded in curing, when they were susceptible of cure, or has relieved more effectually than any other plan would have done, when relief only was to be obtained. Of the sixty cases of such diseases, the history of which I have fully detailed, fifty-four belong to the class of those which have been completely cured, and six only have not been cured, but have received a large measure of relief beyond that which ordinary medicines had afforded before. Better evidence of the value and success of any plan of treatment cannot be desired. In the sections that are about to follow, the same train of evidence will be laid before the reader, who will find that the use of ammoniated counter-irritants (65) has been equally, and even more uniformly successful in those complaints which are connected with the circulatory system, or the distribution of blood through the body; also in those which are of a mixed character; and lastly in those arising from accidents, hurts, or an ill-conditioned state of the skin.

1.—Headache from fulness of Blood in the Head.

CASE LXI.

Plethoric Headache from an overcharged stomach.

A lady whose case of nervous headache, cured by the ammoniated counter-irritants, has already been given (XXXV.), and who has since been in the habit of using those agents in the cure of the same sort of headache among her friends, had, about five or six years ago, a governess in her family, who was much addicted to copious and fast eating, and who had become, in consequence, plethoric, and inclined to fulness of blood in the head. She had, as usual, one day in June, 1833, partaken largely of some wholesome animal food, when she was seized with giddiness, stupor, fulness of blood in the head, throbbing and acute pains in the temples and at the top of the head, in the direction of the great sinus. Her extremities, at the same time, had become colder even than usual, and her whole appearance alarmed the family. Being sent for, I found the patient, a lady about twenty-seven years of age, labouring under a positive surfeit, experiencing nausea, but not positively sick, and exhibiting all the tokens of pressure in the venous system of the brain. The pulse was wiry, and not very quick. She kept her hands on the top of her head, pressing the part with them, for relief from pain, which she assured me was more intense than she had ever before experienced. The course to be followed here was plain enough. To empty the stomach by an emetic would have been the most prompt and effectual mode of solving all difficulties; but then the turgid state of the veins in the head rendered that remedy an unsafe one,—at all events, one not free from risk. To bleed, on the other hand, with a full stomach, was not less hazardous; although a medical man would never hesitate to proceed to such an operation, were he to be called to a case of indigestion from gluttony, threatening the patient with a sudden attack of what the French practitioners have felicitously termed "stomach apoplexy." In the present instance I adopted the middle course, and applied large compresses saturated with an ordinary ammoniated lotion on the nape of the neck, and behind the ears; while the insteps of both feet were surrounded by similar applications. In the course of ten minutes all cephalic symptoms—the pain, the giddiness, the sense of pressure—had completely subsided; at the same time that the feet became red and inflamed, and the temperature of the lower extremities was changed into one more equable and natural. Having waited about half an hour, to ascertain that no return of the embarrassment in the head took place, I directed a rather powerful emetic to be given, which I found, on my visit the following day, had brought away the entire mass of the dinner, cleared the intestinal canal, and restored the patient to her usual state of health. This accident was a good lesson to the young lady; but as it might

also prove an improper one for her very young pupil, her services were soon afterwards dispensed with; so that I have never been able to learn whether she has, at any subsequent period, suffered from similar attacks.

CASE LXII.

Periodical plethoric Headache from a mal-distribution of blood.

Miss ——, one of several sisters, who had all more or less suffered, between the age of fifteen and two-and-twenty years, from the ill effects of an unequal distribution of blood, until after their marriage,—has experienced, as they had done before her, during the last four or five years, acute pain in the head every four weeks or so; the whole system at the same time becoming languid, prostrated, and disinclined to exertion of any kind. The head is the only part which on such occasions seems to be in a state of activity, —which is of such a painful nature, that the patient can neither speak nor bear to be spoken to; she shuns all association with her family—to whom she is warmly attached, and by whom she is in return as warmly beloved; and excluding all light from her apartment, is compelled to resign herself to a life of perfect inanition for many days together. The attacks were so numerous as well as severe four years ago, that leeches and the lancet were deemed absolutely necessary; and those measures did good; that is to say, they relieved each attack, at considerable expense to the constitution, but exercised no beneficial influence in the prevention of their return. Being desirous three years ago to spare so prodigal and wasteful a remedy, I suggested the use of the ammoniated counter-irritant at the time the plethoric headache was most violent; and that remedy being applied to the temples and forehead, as well as to the nape of the neck, the effect that resulted was precisely what I had anticipated, namely, a cessation of the pain at each of the applications, and the shortening of the usual period of the attack, from a week or ten days, to two, or at most three days. This has been the case on a great many occasions, and even as late as the months of March and April last.

CASE LXIII.

Congestive Headache of a periodical nature, probably dependent on indigestion.

I shall conclude the few cases of this complaint that I have purposely selected from among patients of every station in life (out of some hundred of which I have a classed register) with the narrative of one furnished me by a foreign ambassador, who, during a temporary leave of absence from his post in this country, and while travelling in Italy about three years ago, had occasion to use an ammoniated counter-irritant of a moderate strength, the prescription of which I had given him at his departure from England.

One of his valets having been reported to the nobleman in question as suffering greatly from intense headache, which prevented his attending to his duty,—a headache, too, said to be most aggravated by the intense heat of the weather at that season of the year (July), His Excellency desired to see the individual, and questioned him on the subject. It appeared that this was a periodical form of headache, which invariably made its appearance on each day as the sun rose in the east, and gradually subsided towards evening, until it vanished quite at sunset. The sufferings were said to be exceedingly acute, and such as to prostrate the patient to that degree, that he became almost powerless. Every means had been adopted by the physician of the family to get rid of this daily unwelcome intruder, but without success. Neither leeches nor ordinary blisters, nor evacuants, nor quinine, resorted to on the supposition that the complaint was aguish, had produced the slightest alteration in the complaint, or in its mode of action; and in that state the patient was when his master examined him. A fellow-servant, who had heard of the external remedy which their master had brought from England, and which was said to possess the power of curing pain in the head or any where else, earnestly solicited His Excellency to try it on the footman. A very able physician of the place being consulted by Count ——, on the safety of using such a remedy in such a case, and that gentleman's opinion being favourable to the application of the lotion,—the same was put on the temporal region of the right side, without loss of time, and suffered to remain on for nearly a quarter of an hour, at the request of the patient himself, who held it fast, lest any body should remove it too soon. At the end of that time a very large blister was formed, which discharged a prodigious quantity of serum, so acrid that it scorched the cheek and the whole surface of the arm, over which the serum drained during the deep sleep into which the patient had fallen a very few minutes after the embrocation had been applied. That sleep, by the by, was the first which he had enjoyed for several days during the progress of the disorder. And so far, therefore, the lulling of the nervous pain in the head by the action of the counter-irritant, proved the best soporific. The blister healed like an ordinary vesication; the pain in the head never returned; and the servant soon recovered his natural state of health.

2.—Sudden attacks in the Head. Congestion of the sinuses. Apoplexy.

The examples of headaches from fulness of blood, just now adduced, will naturally lead my readers to expect that the same powerful external remedy which served to cure them would also prove highly beneficial in the more serious attacks of blood in the head, which constitute so important and so fatal a class of disorders of the circulation. Such will be found indeed to be the case. I might bring forward a very large number of examples in support

of the assertion; for the ammoniated counter-irritants, from the instantaneity of their action, are the very agents best calculated to relieve the patient from danger, when something else is required besides the lancet; and my experience in such cases therefore has been very extensive. But I shall select three or four instances only, of individual benefit produced by the counter-irritants in question; in order to show of what a powerful auxiliary we deprive ourselves, if we neglect those external agents, in our endeavours to save the lives of our fellow men, when menaced by a formidable disorder such as is here contemplated.

CASE LXIV.

Case of venous congestion in the head producing convulsions.

A hasty messenger summoned me to a house in Seymour-place, May-fair, on the 22d of April, 1830, to see a child about five years old, of Mr. R——, who had been some days ill with a serious complaint in the head, for which he had received every possible assistance from Mr., now Sir Charles Clarke, and the attendant apothecary. Leeches had been applied in the morning of that day, to endeavour to relieve the young sufferer from a state of coma and pressure on the brain. While the bleeding was going on, it was observed by the nurse, and the watchful and anxious mother, that the child became more and more inanimate, his cheeks pallid, his lips colourless, and the extremities cold. A warm bath was instantly procured, and the child placed in it; the leech-bites were stopped, and the cold lotion removed from the head. Having done this, the affrighted mother sent for the regular attendants, who had already paid their morning visit that day; but at the hour in question the principal of them was not to be found, in consequence of which my attendance had been requested. The child was in a state of collapse, and in the utmost danger. I encouraged the warm bathing as high up as the chest, making the water warmer. The bleeding from the bites of the leeches was arrested more effectually, and I made the child swallow a few drops of æther, followed by hot brandy-and-water. With a view to rouse the brain, I, at the same time, suggested the application of an ammoniated counter irritant, which was sent for immediately from the nearest chemist, and applied over the head as one applies a blister; the apothecary of the family joining me about this time in my attendance. Under the persevering use of these measures the infant finally rallied; and it was remarked that while the ammonia was on the head, and producing a rubefacient effect, the convulsive motions of the limbs, which had formed part of the original attack, ceased. At seven in the evening I revisited the little patient, who was then sitting up in a large bed, and very cheerful, saying he was quite well. On the following day I met Sir C. Clarke in consultation, who proposed that, as the pulse was full, more leeches should be employed. At half after three o'clock in the afternoon, however, having again

been summoned alone to see the child, and finding him labouring under a fresh attack of convulsions, I proceeded to treat him in the same manner as the day before, and the patient once more rallied. In this course I had been encouraged by the candid opinion of my liberal-minded colleague, Sir C. Clarke, who had written to me after my first visit to the child, stating that "my measures had been very judicious;" and it is gratifying at all times to have in one's favour the testimony of a man of such high and well-merited reputation. The case, however, was one which, from the very first, had caused great and just apprehension; and the regular medical attendant, with all his vast experience and success, had never ventured to speak of the result with any degree of confidence. I agreed with him that the frequent repetitions of the attacks rendered the case eminently dangerous, and its unfortunate conclusion proved the correctness of that opinion. Upon examination, although no appearances of venous congestion were found in the brain, yet that it had existed, and had produced pressure enough to give rise to the attacks we had witnessed, and, consequently, to warrant the depleting measures adopted by Sir Charles, was evinced by the condition of the brain itself; as it was found to be in that state which the French have termed, "*ramollissement du cerveau.*" The repeated bleeding had in fact removed the venous congestion. I have related this case simply to prove the instantaneous advantage we may derive, at a season of imminent danger, from the application of ammoniated counter-irritants to the head.

CASE LXV.

Another example of vascular fulness in the head producing an acute disease of the brain.

Lady Jane F——, a young child of the Countess of ———, in Eaton place, had been under the care of a neighbouring general practitioner, for what at first appeared to be a mere derangement of the digestive organs, but which soon became a regular infantile remittent fever; and, lastly, assumed the character of an affection of the brain. At this conjuncture (28th September, 1831), my attendance was required. Every symptom perceptible at the time of my visit manifestly showed that acute cephalitis was in progress, and that unless the condition of the brain and its investing membranes was presently relieved, the worst consequences would soon follow.

The most prompt means, therefore, usually adopted on such occasions, consistent with the extreme youth of the patient, and its previously enfeebled frame, were put in action. Among others I may mention that I found great benefit, in diminishing the excessive heat of the head, from holding the latter steadily over the margin of the bed, with a basin under, while cold water was poured from a large jug over the sides and upper part of the head, as a *douche*,—until the temperature had been brought very low. This suggestion I had some years before received from Sir Charles

Clarke. A corresponding improvement followed these measures; but the little patient continued to lie in a precarious state, requiring to be seen twice on that and the following day.

At the expiration of that period, the most formidable of her symptoms, and the febrile excitement in the brain, again returned, and so pressingly, too, that no time was to be lost. As any further bleeding was not deemed a safe measure, a blister was naturally thought of. But how to wait for its effect in any degree of security, during a period of several hours? I explained this difficulty to Lady ——, and at the same time informed her of the instantaneous action which might be obtained by means of the ammoniated counter-irritants. As those agents were in a certain measure new to her ladyship, I deemed it but right to explain every thing concerning them to her. She assented to their application, which was carried into effect without loss of time, producing the most immediate and most satisfactory result. The child was declared out of danger that same evening, but the complete recovery from the fever was the quiet work of a few days longer.

CASE LXVI.

Giddiness, with singing in the ears, and other distressing symptoms of fulness in the head.

Lady Augusta W——, from causes which it is unnecessary to enumerate, was seized, one morning in May, 1831, with giddiness, which lasted from breakfast-time till late in the day, and made it quite unsafe for her to stand or walk alone. Some appropriate medicine was taken, which seemed to have produced a good effect. On the succeeding day but one, her ladyship awoke with loud and incessant singing in the ears, which became quite distressing, and lasted the whole day. On the morning of the fourth day, her waking was followed by the same symptoms, and she was again giddy on moving. In this unpleasant state she continued for nearly a week, when, beginning to feel alarmed at the symptoms, she required the advice of her physician-accoucheur, who declined bleeding her, for particular reasons, but proposed her living low, and repeating the medicines she had already taken of her own accord. For three more days her ladyship bore the unmitigated symptoms of distress in her head; until at length, having accidentally heard of the good effect of the ammoniated counter-irritants in all cases of fulness in the head, she desired my attendance. After having informed myself of all the preceding features of the case, I used the external application in question, and the sensation of giddiness, as well as the singing in the ears, completely disappeared in half an hour. The lotion was applied behind the ears and between the shoulders, and no blister followed.

CASE LXVII.

Apoplexy: instantaneous rally during the period of coma and insensibility.

The Hon. and Rev. William ——, whose family I had for many years attended, and who had himself been for many months under my care, in consequence of protracted illness of mind and body, arising from affliction and an irregular mode of living, was seized with an apoplectic fit, of great severity, on Sunday, April 25, 1830. I arrived at his residence soon after, and found him in a state of profound coma, with loss of sensibility in every part of the body, short nervous breathing, flow of saliva out of each corner of the mouth, and that species of equine puffing, or snorting, which so peculiarly distinguishes certain species of apoplectic seizures. Mr. Campbell, a neighbouring surgeon, had been summoned, and had bled him to thirty-two ounces; besides which he was in the act of applying leeches when I arrived. I remained three hours by the bedside of the patient, with the pulse in my hand, judging by it of the propriety of prosecuting further the system of depletion. He had had two regular fits. The head was inclined to the left side; the left arm was paralysed; and the convulsive movements of the face, neck, chest, and right arm, were very considerable. He was again bled to the amount of ten ounces, three successive times during my stay in the house—the two last in anticipation of a fresh-coming fit. In the two intervals between the bleedings, the action of the heart became feeble. Sulphuric æther was administered during the one, and brandy and water during the second. At length, having reason to think that the charge in the vessels of the head had been greatly lightened, and finding a sort of collapse generally to be coming on, I covered the whole of the scalp with a compress, saturated with pure ammonia—the only counter-irritant at hand—and applied the same simultaneously to the feet. This treatment shortly recovered the patient, who became sensible from that moment, and swallowed some pills I offered to him. He afterwards entered into conversation with me, and observed that he "was then suffering from violent headache, but that as he was perspiring, he presumed it would do him good." He perfectly knew me for a short time, but not so during the whole of his conversation. The speech was much affected, and the left side of the mouth drawn up; but reaction had taken place, and the recovery from the attack was complete. This I attribute to the instantaneous and extensive cauterisation produced on the scalp.

CASE LXVIII.

Apoplexy.

I might cite in this place, did I not fear to overburden the volume, two other extreme cases of apoplexy, for one of which I was sent for express to Southampton, on the 16th of April, 1831. In that

case, after the rally of the patient from coma, and a state of great oppression, by means of ammoniated counter-irritants—a state which had continued, notwithstanding the proper measures adopted by Mr. Maul, sen., including venesection—I brought him to town with me, and had occasion to remark, during the journey, that whenever he attempted to speak he could only pronounce the half of each word, and spoke like one who has been suddenly awakened from a profound sleep, and who neither knows what he says, nor comprehends what is said to him. In this case the triumph of the ammoniated counter-irritants, applied either as rousers of energy in the neighbourhood of the head after bleeding, or on the lower extremities as revulsives, was most complete; for not only did the patient, then seventy-five years of age, recover quickly, but he has never experienced another attack of the same formidable complaint since.

3.—Sore Throat. Inflamed Tonsils. Croup. Whooping-Cough.

In all these modifications of membranous, as well as substantial inflammation, blisters are well and generally known to be of infinite service. The more sudden and acute the attack, the greater the relief, and the more certain the recovery, provided blisters be applied immediately, and strong enough. But their agency, in all such cases, is really as nothing, compared with that of the ammoniated counter-irritants. Indeed, it might be said with justice, that in as much as an ordinary blister takes, we will say, eight hours to produce its complete sanative effect through two or three stages of counter-irritation—whereas the ammoniated counter-irritant produces the same effect, through the same stages, in less than half an hour; it follows that their relative virtue, in the cure of the diseases under consideration, may fairly be stated as one to sixteen. This superiority, which will be seen fully exemplified in the history of the cases that follow, has been of immense advantage to me in practice, during the prevalence of sore throats that in so special a manner marked the two last winter seasons in London.

CASE LXIX.

Repeated and severe Sore Throat.

No one is more liable than the author of these pages to what is commonly called a sore throat. At all times, and under the slightest exposure to a damp winter easterly wind, or to a sudden alternation of heat and cold, the throat being then not more than usually clad, a regular inflammation of the lining membrane of the upper part of the trachea and œsophagus, and presently also of the tonsils, is set up, which will run into fever and general disturbance of the constitution. Before he became aware of the powerful agency of ammoniated lotions, the author treated himself in the ordinary way,

and was, in consequence, kept away from his avocation for two or three days at every attack; but as soon as experience had taught him how much more quickly such cases could be disposed of by those counter-irritants, no attack of sore throat in his own person has been suffered to run on beyond the first manifestation of soreness and inflammation. The last occasion on which the external treatment was adopted, in preference to any other medical treatment, was in the spring of 1837, when almost every body complained of sore throats, and the town was rife with cynanche trachealis, laryngitis, bronchitis, and tonsillar swellings. On one particular evening, in the month of April of that year, the author was exposed to a damp easterly breeze, while driving in an open carriage to the eastern extremity of London. In the course of the night there had been restlessness, want of sleep, increased heat, and, by the morning, fever. The back ached, the limbs ached, the head ached; in fact, every symptom denoted a severe catarrhal complaint—but the worst symptom was an almost total inability to swallow liquids without excruciating pain. By remaining in bed in a state of perspiration until two o'clock in the afternoon, drinking diluent and diaphoretic draughts at the same time, the febrile symptoms subsided; but the soreness, nay, the absolute pain in the throat augmented. At three o'clock, it became indispensably necessary to keep an appointment out of doors. A compress, consisting of two layers of flannel immersed in an ammoniated lotion, of a strength proportionate to the intensity of the symptom, was put round the front part of the throat like a collar; and lest the pain, which the application was likely to produce, should induce the author to tear the compress off before the full effect had been produced, a silk handkerchief was tied over it. In two minutes the smarting caused by the application had become terrific: it was almost like what a red-hot iron might have been expected to produce. The lotion nevertheless was kept on for five minutes more, when the trickling of a quantity of serum along the side of the neck showed the formation of a blister, and the compress was removed. The inward soreness was gone—absolutely dispersed. A large draught of warm water was swallowed in sips, as well as in gulps, in order to test the soundness of the recovery, and no uneasiness whatever ensued; in fact, the disease was no longer in existence, and the author was able to keep his appointment.

CASE LXX.

Sudden and severe inflammatory Sore Throat.

A gentleman connected with a banking establishment not many minutes walk from Whitehall, came to me from his residence near Portland place, on the 7th of July, 1835, complaining of sore throat. On examining the back of the mouth, I found that part highly inflamed, the right tonsil much enlarged, and deglutition difficult as well as painful. He had had the sore throat for two days, during

which he had been advised to use gargles of port wine, hartshorn liniment, purgative medicines, &c. but without any benefit. The complaint, on the contrary, had become at last so troublesome, that he determined on having my advice. I made the patient sit down and remove his cravat, after which I applied a compress with an ammoniated lotion on the right anterior side of the neck, two inches one way by four inches the other. I held it fast on the part for two minutes, at the expiration of which time a full blister of the same dimension had risen, which throughout the day discharged very abundantly, and all vestige of the complaint was gone before the evening. From my house the patient went to his office, to attend as usual to his occupations, and suffered no further inconvenience, though he complained much of the smarting of the blister.

CASE LXXI.

Acute and sudden Sore Throat.

Sir Charles D——, who had often consulted me on account of his health and that of his lady, and who was well acquainted with my notions and practice respecting sore throats, met me on the 13th of July, 1836, in the street, and informed me that on "the Friday previous, the 8th instant, he had suddenly awoke with a dreadful sore throat, so painful, and at the same time so choking, that he thought he was going to be suffocated. He instantly got up, applied a compress saturated with an ammoniated lotion I had recommended to him on a previous occasion (Case LIX.), and went to bed again. It raised a blister in a moment; but he went to sleep notwithstanding, and upon awaking in the morning the throat was quite well."

CASE LXXII.

Severe Quinsy.

The butler of Mr. Dav—t, a gentleman residing in the North of England, was attacked in the autumn of 1837 with the severest form of quinsy, which threatened suffocation, and prevented the deglutition of even the smallest particle of liquid, without producing pain and an inward convulsion. A lady,—whose case of violent sprain from a fall, cured by counter-irritation, will be found related in its proper place (Case XCII.), and who was familiar with the use of the ammoniated counter-irritant, one of which she always had with her wherever she went,—was at the time staying on a visit in the house, and being solicited by her maid to spare some of that preparation for the patient, who was supposed to be in a dangerous state, she acceded to the request. The counter-irritant was in consequence applied to the throat the same evening, and in the course of the night the disease completely disappeared,—a blister having taken place, notwithstanding which the patient was able to resume his active duties on the following morning. This information the lady in question, Mrs. H——, gave me of her own accord

on the 20th of May of the present year. Apparently the disorder in this instance must have been in its first or active state of inflammation; for if suppuration had already taken place the counter-irritant would not have had the effect it had. And here it is that I must repeat how necessary it becomes, in using such agents, to know precisely the condition of the parts, also the degree of susceptibility in the skin of the patient,—so as to be able to determine beforehand the relative proportions of the ingredients so often alluded to in the composition of ammoniated lotions or embrocations.

CASE LXXIII.

Croupy Sore Throat and Earache. (Cynanche Trachealis and Otitis.)

Mrs. A——e, aged twenty-five years, residing near the Cambridge and Oxford terraces, Edgeware road,—a lady much disposed to plethora, from which she was fortunately relieved by natural efforts,—had occasion one evening, for particular reasons, to put her feet in warm water before she retired to bed; and she fell asleep in that position, after having dismissed her maid for the night. How long she slept she knew not; but on waking she found the water perfectly cold, and felt her feet quite chilled. In the night a sudden suppression took place, shivering followed, with subsequent restlessness and feverish heat; and by morning a regular attack of cynanche trachealis, or croupy sore throat, had come on, accompanied by severe pains in both ears, and general fulness of the head. This occurred on the last day of January, 1831. For four or five days this lady was placed in considerable danger, being threatened at times with suffocation; and I found it necessary to visit her three and four times daily. After copious bleeding, both general and local, and the use of the medicines generally administered on such occasions, the constitutional symptoms of the disease subsided, but not the local pain and inflammation, or rather the feeling of painful strangulation; for it was more that, than any positive pain she experienced. On the fifth day of the disease, finding that we were not gaining ground, and the apprehension of the patient in the absence of her husband and of her friends, becoming more and more urgent, I proposed to apply a large compress with some of the strongest ammoniated counter-irritants, the nature of which, as an instantaneous blister, I fully explained to the patient. The application took place at once; in less than twenty minutes the whole of the throat was enveloped in one mass of prominent vesication; and the result was that the patient derived an almost instantaneous as well as permanent release from all the most distressing and urgent symptoms of the complaint. The blister healed without difficulty; but the place to which it had been applied exhibited for two or three years afterwards, a red mark, whenever the lady flushed. That mark has since completely disappeared. It is worthy of notice (although I do not profess to draw any conclusion from the fact) that Mrs. A——e has never had a sore throat since. The sup-

pressed function produced by the immersion of the feet in cold water, which had been the cause of the attack in the throat, was not restored until the expiration of another month.

CASE LXXIV.

Croup in a child seven years of age.

The young son of a physician in good practice, whose health had not given the slightest indication of forthcoming disease, was heard one morning by his father to fall on the floor in the nursery overhead, at the same time that a loud scream of alarm was uttered by the nurse. In an instant the father was by the side of his child, whom he found in the nurse's lap, black in the face, breathing hard, and with a stridulous whistling sound, apparently overcome by an attack of blood in the head. While a lancet was being fetched from below, the nurse stated that the child had only a few minutes before had a sudden attack of cough, of the most violent description, accompanied by a peculiar noise which she had never heard him make before; and that after a minute or two of such incessant coughing, and while in the act of walking towards her, he had fallen in a fit. The jugular vein was opened; the flow of blood relieved the head, and the child was able to raise it and to look up. The face became less ruddy, or rather less black; but the lips continued of a purple hue, and the breathing was rather more stertorous than before. The vein of the right arm was now opened, and ten ounces more blood were taken away. Respiration and the heaving of the chest were relieved by this; but presently a paroxysm of cough came on, which was nigh throwing the little patient back again into all his sufferings, and from which the father learned the true nature of his child's sudden indisposition; for the peculiar and characteristic sound of the cough proclaimed it to him as croup. My assistance at this time being requested, I recommended a strong ammoniated counter-irritant to the throat, in front as well as behind (avoiding the opening made in the vein), in order to check, by revulsion, the rapid accumulation and deposition of lymph on the tracheal membrane: and I recommended further that the application should be permitted to remain long enough to blister the whole surface. While the compress was on, another severe paroxysm occurred, which convinced me also of the nature of the disorder. The paroxysm was as violent as if no previous bleeding had taken place. It lasted a minute or two; and the father doubted whether the cold of the lotion, when first applied, might not have provoked this fresh attack. He relied, however, entirely on my experience in such an external treatment, and suffered the application to remain on until the full effect on the skin had been produced. As soon as the compress was removed, and rags dipped in hot water had been applied in its stead, the child fell into a profound sleep, out of which he awoke, apparently quite well. Cough came on again in the course of the day, but not of a croupy nature; and the little fellow recovered most completely in two days.

The rapidity of the cure in this case must not surprise. In its destructive agency croup is equally rapid; and the development of an external inflammation that shall instantly check such a disease, through the instrumentality of an energetic counter-irritant, is not more wonderful than is the sudden and spontaneous internal inflammation, which constitutes the disease itself, and often destroys its victim in four-and-twenty hours.

In my note-books I find recorded the histories of several cases of obstinate whooping-cough, which, after reaching a certain stage, had given way to the same external agency, with a facility that would have surprised many not fully conversant with the action of counter-irritants. But I forbear burdening my volume with any examples of that disease so cured; because the nature of the disorder is so simple and so well understood, and the probable good effect of external counter-irritants in their treatment so generally admitted, that I could not invest the cases themselves with any degree of interest. Thus far however I will say, that if applied in time, and of proper strength, a counter-irritating ammoniated lotion, used externally, and the prussic acid employed internally, will cut short almost every case of whooping-cough, in the course of the first few days from the original invasion of that disorder.

4.—Early Inflammation.

* *Of the Bronchia.*

CASE LXXV.

Bronchitis, or bronchial inflammation, with loss of voice, and minute ulceration.

In this case the patient, an unmarried lady, the sister-in-law of an Irish baron, after a very severe attack of catarrh, lost her voice entirely, and began to complain of uneasiness in her throat. There was no difficulty of swallowing, no enlargement of the tonsils, nor any evidence of inflammation in the visible portion of the back part of the mouth. But on being made to draw in a deep inspiration through a small quill, a hectic cough was instantly set up, which sounded like the wind through a broken reed. Cough would also come on spontaneously, and very frequently through the day; and when, after a violent paroxysm, the patient attempted to speak, hardly a syllable of what she uttered could be heard at the distance of a few feet from her. At one time I succeeded, without exciting immediate coughing, in holding the tongue down with the handle of a spoon, and making her take a deep inspiration, so as to detect, near and about the glottis, a number of very minute spots, smaller than millet seeds, resembling ulcers. As every means suggested by an able country practitioner had been adopted before my arrival from London for the purpose of consultation, I had nothing left to pro-

pose but counter-irritation, with the view of overcoming in good time the morbid condition of the bronchia. Accordingly a lotion of that nature was prescribed, and ordered to be used for a few minutes every day; which having been done for the space of six weeks, the disorder was successfully conquered.

** *Of the Lungs or their membranes.*

CASE LXXVI.

Pneumonia.

On the 27th of April, 1837, a lady, 47 years old, the mother of seven children, was attacked with severe pneumonia, after exposure to cold in a light evening dress. There was acute pain in the chest, through and through, as she expressed it; great febrile excitement; cough, attended with general uneasiness and heat in both sides of the thorax; fever, pain in the head, and great soreness of the bones of the face. The pulse, at the same time, was full. Of this particular form of pneumonia, a great many cases had occurred, during that season in London, and many patients had died of it. It was a singular and a distinctive symptom of that species of complaint, that the bones of the face were positively painful to the touch in all their parts. The fatal conclusion of an attack of this kind, within two days of its first coming on, under circumstances of exposure to cold, somewhat similiar to the present, in the case of a favourite daughter of William IV., was just then the topic of general conversation, and my patient felt great alarm at her own situation in consequence. I proposed bleeding in the first instance, and next blistering the chest with the instantaneous blistering ammoniated lotion. Some reasons, however, were urged, why bleeding should *not then* take place; and I was compelled to give way to prejudice. But the counter-irritating lotion was readily assented to. It was applied in my presence, and kept on firmly for five minutes; producing in that time most ample and complete vesication; during which the pain in the chest, that in the cheek-bones, and in a great degree the one in the head also, disappeared and did not return. In two days more of ordinary treatment the patient recovered her usual state of health.

CASE LXXVII.

Incipient Pulmonic Consumption.

Miss Charlotte ——, a tall, young, and well made person, who had reached the age of twenty-four years, without any serious ailment, and who belonged to a family free from all hereditary disease, was attacked with an inflammatory complaint in the chest, while out of town, which confined her to the house the whole winter. In the following year a similar attack came on, which

lasted somewhat longer, and was got rid of in the same way as before. She had a third time a similar attack in the winter following, after which she found herself so much reduced that she was brought to London for consultation. The opinions given as to her real state varied considerably; but, from the complexion of them all, it was evident that incipient consumption of the lungs was the prevailing idea formed of her disorder, by almost all the physicians who had seen her. When it came to my turn, I found the evidence for such an opinion to be so strong, that it was impossible not to adopt it. I confirmed it therefore, though in a guarded way, by my own statement, and when I was asked what I should mostly rely upon to prevent the probable evil results that were anticipated, I replied "counter-irritation." I had at that moment two other patients, declared by all the faculty to be consumptive, who were deriving great benefit from counter-irritation: the one a young gentleman, who had a seton in the left breast; the other a man more advanced in years, who had on perpetual blisters. I could not therefore recommend any thing more promising than the plan of counter-irritation. For the common perpetual blister, however, I substituted an ammoniated counter-irritant, one of which was applied three times a week. This practice was continued for the space of six months, at the end of which time Miss Charlotte —— was so much better that she was allowed to join a party traveling on the continent. There she remained three years, improving in health; but whenever pain under the breast-bone, or on either side of the chest, came on, she was obliged to have recourse to the ammoniated lotion. I not long ago saw her, on her return to England, looking as well as possible; being now free from pain, from cough, from purulent expectoration, from hectic flushes, from fever, and in excellent spirits. Still she is even now compelled to resort to her counter-irritant, the moment she experiences any pain under the sternum.

*** *Of the Heart or its coverings.*

CASE LXXVIII.

The Author's own case of Pericarditis.

On Wednesday, the 19th July, 1837, I attended her majesty's levee, which was crowded to excess, so that at one time the heat of the apartments had become almost intolerable. Many, besides myself, were in a state of perpetual and profuse perspiration.

On reaching the door which leads to the middle room, and which, on that day, was closed so as to admit only fifteen or twenty persons at a time, I found myself ensconced in the recess of a neighbouring window, the lower sash of which was partially thrown up, perhaps as high as two feet. The wind whistled through this opening, and blew upon the left side of those who stood before the window, with their faces turned towards the door. I recollect that,

among the group, there was that most amiable and young looking prelate, the late Bishop of Chichester, who held in his hand an address from the clergy of his diocese, and who expressed how refreshing the coming-in breeze was to him. Not so with regard to myself, who felt chilled by the draught. An instinctive horror at the effects it might produce, made me gather up my clothes, and press the flat hat closer than before to my left side, in order to protect it from the draught.

The perspiration however was checked, although our peculiar position continued but for a few minutes. On the evening of the same day I began to experience some rigours, and great restlessness, my breath became somewhat short, and I felt altogether very unwell. I retired to bed early; but the night was unquiet and agitated, and I dreamt of a severe pain in the left side, just about the place on which the wind had blown in the morning. On waking I found that I had really a severe and deep-seated pain in the left side of the chest; and I got out of bed with some degree of anxiety. I had scarcely reached the dressing-room when the pain increased, and fainting supervened, which barely allowed me time to pull at the bell before I was compelled to stretch myself on a couch. Some stimulating drops were administered, which rallied me for a time, but only to be sensible of an increase of pain in the region of the heart, accompanied by great tumultuous action of that organ, producing great anxiety, and difficulty of breathing. I attempted to take a deep inspiration, but it threw me into a still more violent pain. I felt my pulse, but it gave no comfort: it beat irregularly—it was alternately full and wiry—strong and feeble. Anxious to shake off apprehension, that I might not unnecessarily alarm my eldest daughter, the only one of the family then in the house,—I endeavoured to rise from the couch; but scarcely had I gained my feet than fainting came on again, and I sunk back in the horizontal posture, calling out for some person to be sent for to bleed me. Such is the constitution of this great town, that although the most pressing messages, written as well as verbal, implying great danger, were sent in all directions near us, to all of which that waiter-like unmeaning reply "coming" was sent,—no one in reality came. Yet it was only nine o'clock in the morning, and the medical men, the apothecaries, and the chemists are in abundance in my neighbourhood. Still no one was coming. The case must soon have become desperate. I was perfectly collected notwithstanding the increasing agony of the deep-seated pain, which extended from the front to the back, through the heart, and down the left arm. My only apprehension was, lest inflammation being once suffered to be established, either in the heart or the pericardium, bleeding might prove too tardy a measure to save me from the remote evil consequences of that disease. A young gentleman appeared at last, after the lapse of nearly three quarters of an hour from the first seizure, sent by my kind friend Mr. Tupper of Burlington street,—who, at the sight, I suppose, of my pale counte-

nance, hesitated to bleed me, and did it in great trepidation to the extent I indicated. The relief I experienced, after three cupfuls had been abstracted, is not to be described; the sensation was a luxury, and I wished I could have perpetuated it.

It stilled the tumultuous throbbings of the heart, it restored regularity to my breathing and to my pulse, it cleared away the oppressive cloud of fear and apprehension (heightened not a little at the sight of the only child then under my roof), and altogether it made me look upon the youthful operator as my saviour. But the pain continued yet in its place; it was as if a sharp instrument had penetrated the heart. That organ had evidently been relieved from the oppressive currents of blood by the operation; but inflammation, either of its structure or of its coverings, must have been in active progress, and might still extend to an unmanageable degree, unless speedily checked. I therefore saturated a white pocket handkerchief, doubled in the usual square manner, with a strong ammoniated embrocation, and applied it to the region of the heart where the pain was situated. I did a similar thing with another handkerchief, and applied it simultaneously to the back, below the margin of the left shoulder blade. These I kept on until both surfaces became as it were red hot, and burned vigorously. In proportion as these effects were produced, the inward pain or stab-like feeling decreased, until at last it completely subsided and passed away. I dressed in an hour after, and drove out in the carriage to my usual avocations for the rest of the day, without the smallest inconvenience. The pain never returned. In the evening I found a slight blister on the chest and none on the back; and the next morning, on inspecting the third cup of blood taken from the arm, it appeared opalescent on its surface, and covered by a slender film of coagulated lymph.

No question but that all this tempest had had its origin in my exposure to the draught of wind from the fatal window, and the sudden check of perspiration which followed. I say fatal window with too much truth; for, of the others who had been like myself exposed to its draught, one there was who little thought that, on the fourth day from that occurrence, he would cease to be reckoned among the living. The fate of the amiable prelate mentioned in the early part of this narrative is well known. He returned on the day after the levee to his bishopric; was taken ill with an inflammatory cold, they say, in the night of Thursday; and expired on the succeeding Sunday in his episcopal palace. I have no hesitation in stating, that I attribute my safety not so much to the bleeding as to the counter-irritant I employed on the occasion, endowed with such instantaneous and energetic power.

I might easily multiply evidence to prove the immediate good effect procuced by ammoniated counter-irritants, in cases of other forms of inflammation, especially of the abdomen; among which the case of a physician to whom the profession is much indebted for many ingenious mechanical contrivances, as auxiliaries to

medicine, might be cited. In his case a protracted and serious attack of entero-mesenteritis was greatly relieved by the application of those powerful agents. But it would lead me to an endless task, were I to add to what I have already advanced, in support of my statement of the excellent effects to be obtained from such counter-irritants, in all diseases in which the circulation is principally affected.

SECTION IV.

CASES OF DISEASES OF A MIXED CHARACTER.

In this section I propose to illustrate, by means of four or five very striking examples, the power of the ammoniated counter-irritants over certain diseases, which I have classed under one general denomination of "diseases of a mixed character," simply because I am not able to define their real nature with more precision. In this I am not singular; since every body will agree that while treating of gout, which is one of the diseases in question, or of the various forms of palsy, which is another of the diseases in question, the medical profession cannot advance, nor has it ever advanced, any thing beyond mere conjecture, respecting the true origin or cause of those maladies; or indeed stated with distinctiveness in what they consist. Wishing then to avoid every species of error into which I should have myself fallen, as well as have led my readers, had I attempted to specify the real character of gout or palsy, by classing either of them under a more distinct head, (as I have hitherto done with regard to those other diseases of which an illustrative account has been given in this volume,) I have adopted the "mezzo-termine" at the head of this section, to signify that the complaints therein treated are of a nature not easily defined.

Let us look to gout, for example, and see whether or not what is here advanced on general grounds is not truly and immediately applicable to that particular complaint. Who can say that gout is essentially a disorder of the nervous system, or of the muscular, or of the tendinous tissues, or in fine of the system of circulation? In that disease we have pain, and a very acute one; but is that a sufficient reason for concluding that the disorder has its origin in the nerves—the only *sentient* organs in the body? There is also enlargement of the parts, thickening of the muscles, stiffening of them likewise, and inability to move them. Are these reasons enough for imagining that in the muscular system resides the true seat of gout? Again, we often notice very considerable and always some inflammation in the part affected by gout, great redness, throbbing, and increased heat; all which phenomena belong to

disturbed and increased circulation. But are these good and substantial grounds for considering gout as a disease of the circulating system? Nay, we occasionally witness a sudden transference of the acute suffering of gout, with its concomitant signs of inflammation and pain, from its more usual seat, the extremities, to some important internal organ. Is such a phenomenon, which in ordinary circumstances we should look upon as a phenomenon of circulation, to be considered as further marking the correctness of those who are disposed to view gout as a disease of that function? We should not reason philosophically were we to adopt any such conclusion; for if, as Mr. Swan in his able work on diseases of the nerves has observed, pain be conveyed from one place to another, entirely by the nerves, and not at all through any other medium —the mere sudden leaps which *erratic* gout-pain often takes, will not necessarily imply any agency of the circulating system. With respect to the latter observation of Mr. Swan, some of my readers, who may have smarted under this troublesome disorder, will be inclined to ask, if the pain in the original seat of the gout, and the pain manifested in the new seat to which gout may have been suddenly transferred, are to be assumed as indications of suffering in the *nerves* of those respective parts, why is no pain experienced by the patient during the transference of the disease from one seat to the other, along the course of the nerves which keep the two seats in communication with each other?

Would not this total absence of pain in the intermediate course, my readers might further enquire, denote rather, that the transference of the disorder has been effected through some other channel than that of the nerves? and that the channel in question is probably the circulation? The phenomenon of pain shifting suddenly from one place to another, is one which we have not yet made out. "It would be interesting," remarks the same respectable authority just mentioned, "to know by what course pain is conveyed from one part to another; but this investigation is attended with considerable difficulty." And so is the whole question of gout, which remains as much unsettled now, as it was in the times of Sydenham, one of its greatest martyrs—and as it was long before him. In classing, therefore, my examples of gout under the head of "Diseases of a mixed character," I avoid both Scylla and Charybdis, and try to steer clear in mid-channel.

In reference to paralytic affections, I admit that the same degree of indecision as to their parental source, does not exist. Pure, genuine palsy is unquestionably a disorder, the true nature of which modern physiologists and pathologists appear to have made out almost to demonstration. But it is not so with regard to such paralytic affections as are here illustrated by examples of recovery, through the action of counter-irritants, and which are so mixed up with other derangements of the constitution, that it is difficult to discern which is the parent disease and which the offspring. Under these circumstances, I thought I could not do better than to associate

such affections, with gout, under one denomination of "diseases of a mixed character;" and I hope that what I have done for the sake of convenience, will not be imputed to me as a mark either of ignorance of what is at present known on the subject, or of presumption in wishing to introduce new distinctions in the methodical arrangement of diseases.

The first form of disease under the present head, which I shall illustrate by three examples, is suppressed gout: or, as it has also been called, *repercuted* or *metastatic* gout—according as it has, or has not, made its appearance in a part of the body different from the one in which it originally appeared, and which it has abruptly left. This is unquestionably the most dangerous form of gouty disease; and it is so because, when the malady has suddenly deserted its post, none can predicate in what other more important part of the human frame it may not take up its quarters, either immediately, or at no distant period. The parts principally liable to such visitations, under the circumstances here alluded to, are the heart, the stomach, and the head; of each of which visitations I shall here give a single example, to show, first, their extreme danger, and, secondly, the immense assistance to be derived in such cases from a proper use of strong ammoniated counter-irritants to meet that danger.

1.—Suppressed or Repercuted Gout.

* *Affecting the Heart.*

CASE LXXIX.

On the 31st of May, 1831, I was hastily fetched away from home at an early hour in the morning, by one of the servants of Lord ——, living not far from my house, and who was said to be dying. On entering the drawing-room, I beheld the patient reclining on the back of a large arm-chair, apparently in a lifeless state, his right foot, covered by sundry flannel wrappers, resting on a stool before him. On approaching him to lay hold of his hand, I could hardly distinguish the act of respiration. The face was of a livid hue, and the heaving of the chest took place at singularly large intervals. No pulse was found at the wrist. I applied my ear to the region of the heart, but no distinct pulsation could be made out. That organ was in action still; yet its movements more resembled a tremour or a fluttering, than any distinct vibration. I called for wine and brandy and hot water instantly, while I stripped the wrappers off the foot. On the latter being uncovered, the whole secret of this awful state of the patient was made apparent. Lord —— had, for some days, been suffering from an attack of gout in that foot, to which disease he was frequently subject. On that morning particularly he had complained to his

valet that the part was excessively painful and inflamed; and he had, in consequence, repeated the dose of colchicum, which his lordship, of his own accord, used to prescribe for himself in these attacks; for he had seldom consulted any medical man for the complaint. Thus far the servants knew. One of them also stated, that as he came into the room with some message, he had found his lordship in the state I then saw him; in consequence of which he had fetched me to him.

How long their master had been in that condition they could not tell; but it could not have been long; for one of them had had occasion to enter the room half an hour before, and his lordship was then engaged in writing some letters, with his foot placed on the stool. That foot appeared now cold, of a bluish livid tint, the surface of the instep flaccid and rugose, as if the skin had collapsed, after having been extensively stretched, and no symptom of active disease was upon it. While listening to this statement, I was engaged all the time in affording succour to our patient, who, to all appearance, seemed insensible to what was going on around him. The necessary articles being brought, I forced down the throat a large portion of a tumbler-full of a mixture of wine and brandy, made hot with boiling water; at the same time, flannels, burning hot, and rapid frictions, were applied to the foot, while one of the strongest ammoniated counter-irritants was sent for. The first portion of the stimulants was presently rejected from the stomach, and a like quantity poured down into it, equally warm. The counter-irritant arrived, and it was put on the whole of the instep, by means of a very thick compress, which was bound tight round the foot by a handkerchief. Again the stomach rejected the brandy and wine, and again I reiterated the dose. Three more minutes elapsed, and the pulse rose under my fingers. A fourth time the stimulants were rejected, and a fourth time repeated, and now reaction had so far taken place, as to induce Lord —— to exclaim that his foot was burning. Finding him sensible to what was then going on, I enquired how he felt, and whether he had been aware of the state he had just emerged from. His reply was, that being in the act of leaning forward to write a letter, and while stooping to pick up his pocket-handkerchief, a sudden pain had seized him in the heart, the gouty foot ceasing at the same time to pain him, and that he felt as if he were dying, and fell back in his chair; in which position he remained until his servant first, and afterwards all of us together, had entered the room; of all of which he was quite aware, though he had no power, by tokens, words, or movements, to signify the same. He now complained bitterly of the sensation in the foot, and that he could not bear it any longer. It was worse than gout. I explained the nature and the intention of the application, and requested it might be suffered to remain until I found the pulse to my satisfaction. This was not long in being the case. The arterial movements at the wrist became distinct, strong, and regular; general excitation of the system ensued,

the face regained its natural colour, the skin acquired throughout a considerable degree of heat, and lastly, when the compress was removed, the foot was found swollen, red, hot, throbbing, and in the condition in which it had been early in the morning, before the patient had taken his doses of colchicum. All these events and operations occupied half an hour, and I had the satisfaction, at the end of that time, of leaving my patient in perfect safety, with his morbid companion, the gout, on which he was now almost inclined to look with feelings of friendship. What measure of assistance is to be ascribed to the ammoniated counter-irritant, in bringing back gout to its old quarters, and in arresting the ebbing of life in a patient so situated, at the age of seventy-nine years, I leave my readers to determine. The lesson in reference to colchicum drinking, as a relief from gout, was not lost on his lordship, and well it has been for him that he profited by it; for in the seven years that have elapsed since, instead of a fit of the gout every six months, as was the case before, Lord —— has had but five attacks altogether, all of which he has allowed me to manage. Few persons at the age of eighty-six years, can enjoy easier health than his lordship, or boast as he may of the keen retention of some of the best and most striking faculties of the intellect.

** *Affecting the Stomach.*

CASE LXXX.

A gentleman liable to gout, both through inheritance and an irregular mode of living, who was in the habit of taking Wilson's mixture during the paroxysms of pain, and seldom paid much attention to the rules of diet laid down by his medical friends, after a severe attack of the disease in both wrists, which had continued some days, was suddenly seized, on the 15th of September, 1830, with a spasm at the pit of the stomach, which lasted, by intervals, for the space of three hours, and during which the wrists ceased to give him pain. A friend who happened to be present, and who had been a patient of mine, instantly sent for me; but I could not reach the house before the lapse of time last mentioned. The sufferings of the patient seemed very great, and to require immediate assistance. I prescribed a strong mixture of volatile aromatic ammonia, with tincture of senna and rhubarb, and twenty grains of carbonate of soda. The relatives present were urgent for the addition of some laudanum, but I explained the danger of such a proceeding, under the circumstances of the case. In ten minutes there seemed to be an abatement of the spasmodic action in the stomach. No change, however, had taken place in the appearance of the wrists, and as long at that was the case, I relied but little on the permanency of the relief obtained in the stomach. I called a second time in about two hours. The effect of the mixture had nearly subsided, and the pain at the pit of the stomach was return-

ing. Hot fomentations, with strong mustard water, had been applied in the meanwhile, by my directions, at the wrists, but they had hardly produced any reaction. As the patient was a very nervous subject, and easily alarmed, the continuation, and, indeed, the frequent return, of this vicarious gout in his stomach began to excite apprehension, in himself as well as in his relations; which determined me on having recourse to something more energetic, for the restoration of gout to its former quarters.

A counter-irritating lotion of the ammoniated kind was therefore proposed, its action explained, and its effect tried on both wrists. Owing to the previous application of mustard water, the parts were almost immediately acted upon by the ammoniated lotion, and an almost complete reaction took place in consequence—the gout retiring to the wrists, and the stomach becoming at the same time perfectly free from spasm. The wrists were blistered, and continued sore for some days; but the gouty pain ceased long before they had healed. It is a curious fact that this patient, whom I have often seen since in society, and two or three times also professionally, has never had another genuine and full attack of gout; but he is subject, instead, to periodical returns of a deep-seated wearing pain near the region of the pylorus, for which I have recommended the application of a small compress, saturated with the old lotion, whereby he invariably obtains relief from his suffering.

* * * *Affecting the Head and the Œsophagus.*

CASE LXXXI.

John M——, Esq., aged about fifty-eight years, is subject to atonic gout, some of which he almost always carries about with him in his knees and his ankles. His digestion is much impaired; and unfortunately the patient attends but indifferently to it. Occasionally there is an almost entire failure of power in the limbs. There are small chalky deposits in the fingers, and the general symptoms of dyspepsia, with nervous depression, are at times very distressing. He had been under the care of many eminent physicians, among whom were Doctor Chambers and Doctor James Johnson; but he admitted that he seldom did justice to their directions. His object in applying to me on the 30th of June, 1837, was to ascertain to which of the Spas in Germany he might proceed for the cure of his complaint. After a mature consideration of his case, I recommended Wisbaden, and gave him the necessary directions for that purpose. As he, however, could not start immediately, and was at the same time suffering under a rather severe attack of his stomach symptoms, in consequence of some great dinners and a certain number of glasses of Champagne; and as there was also a white, puffy, gouty swelling in the right knee; Mr. —— requested me to prescribe for him. I did so; and strictly defined his diet. On the morning of the following day I was sent

for in great haste to the neighbourhood of Belgrave square to see him, and the message bespoke alarm on the part of the relations of the patient. I found him scarcely able to speak, and under great consternation. A feeling of slight strangulation, of which he had complained the day before, he now stated to be excessive and insupportable; and yet he breathed with ease, and naturally. There was also a degree of corresponding pain at the pit of the stomach, and the head felt full, heavy, and throbbing. On examining the knee, it was found paler than usual, flabby, and not tender to the touch, unless the joint was squeezed very hard with both hands. The patient's anxiety was all about the throat. He either could or would not swallow for fear of suffocation; and he was inclined to think that he must have caught cold after returning from a late dinner on the preceding night. But the disorder was manifestly far different from a sore throat. It was a spasmodic contraction of the œsophagus, from metastatic gout; and the symptoms of head affection were also connected with that transference of the disease from the knees. On sending for me that morning, the patient, judging from his own feelings in the throat and head, expected that I would order bleeding, or at least leeches to the part; instead of which I applied an ammoniated lotion of moderate strength, which I had carried with me when sent for under alarm. In two minutes after its application to the throat, in the presence of his lady, the patient became able to swallow a glass of water with ease, and stated that he was quite well. Not liking to trust to this sudden amendment, I proceeded to apply the same counter-irritant, on a piece of flannel, to the instep of the right foot, which became red in a very few minutes. The flannel was left in its place through the day. At night I found my patient much better. The foot was not only inflamed, but a large blister had formed, containing at least half a pint of fluid, retained by the cuticle, which was as yet unbroken. From this time forward the case became one of ordinary derangement of the biliary system, in which, indeed, the attack of straggling or erratic gout had originated; and it was treated accordingly. The blister discharged its fluids two days afterwards, and was kept in action as an open sore for some days, in hopes that it might stand in lieu of a more active fit of the gout, of which the patient's unhinged constitution was incapable—and thus keep off, as it actually did, all returns of the more formidable symptoms in the throat and head.

2.—Genuine Gout.

The cases of genuine gout which I have treated in the course of the last nine years, by means of the external application of ammoniated counter-irritants, are both numerous and striking; but to specify them, much as they resemble one another, and familiar as the disease in its ordinary form must be to almost every one, would involve an unnecessary increase of the matter of this volume. I

have only to state, as a novel feature in the treatment I adopt—which I call the external treatment of gout, in contradistinction to that which consists in giving colchicum and other internal remedies—that on the appearance of the first blush on the toes, or other part attacked with gout, I apply a counter-irritant on the place, so as to immediately bring to a crisis the inflammatory action in which resides the sanative effect of gout; and I convert a series of capricious, uncertain, and unsteady pains, which left to themselves last several days, into an ordinary form of local disease, easily managed, and specifically under our control; performing most completely the vicarious office of gout in promoting constitutional health. I seldom, if ever, have recourse to colchicum. I prefer other safer sedatives, and I look to a judicious, proper, and effective clearance of the digestive organs, for a successful termination of the attack in a much shorter time than under any other treatment. Another great feature of the external treatment is, that in the majority of the patients who have submitted to it, the attacks of genuine gout have been of much rarer occurrence after the first recovery.

3.—Paralytic Debility.

CASE LXXXII.

Paralytic affection of the left arm.

The late M. Laurière, an eminent jeweller, living in St. James's street, having been labouring for some time under a paralytic affection of the left arm, subsequently to a more regular attack of palsy, was placed under my care at the desire of a benevolent foreign nobleman now no more, on the 27th of January, 1831. I continued to see him daily for a week, and afterwards from time to time until his complaint appeared to be mending, notwithstanding all the very unpromising symptoms which accompanied his case. His advanced age, and the serious nature of the attack he had experienced in the head, seemed to preclude all hope of a recovery. Still as the lifeless condition of his left arm was an annoyance as well as an inconvenience to him, I subjected it to friction with an ammoniated lotion; while at the same time I applied that counter-irritant to the spine between the shoulders. I was very soon after gratified at the result of this method of rousing the energies of the upper extremity; which recovered its tone and faculty so far that M. Laurière could raise it without helping it by means of the other hand, as he had always been obliged to do before.

CASE LXXXIII.

Paralytic affection of the left side of the body. (Hemiplegia.)

A lady whom I was attending in March, 1837, requested me to prescribe for P. Weston, a young man, the brother of her maid, who had been for some time afflicted with a paralytic affection of the whole of the left side. With difficulty he hobbled into my room on the 11th of March, and related his story, which seemed to refer to some general attack of palsy he had sustained a few months before. At present his state was this: He had an odd sensation on one side of the head, different from that of the opposite side; the left side of the face was rather drawn, the muscles of the throat being also somewhat contracted; the left arm, which was partially wasted, lay perfectly inanimate and almost deprived of feeling, by the side of the body. It did not impart to the touch the sensation of cold, although the hand was always clammy, and cooler than the rest of the body. If by laying hold of the fingers the arm was raised to a horizontal level, and then let go, it would fall to its former position, in the manner of the arm of one of those dislocated toy-clowns and pasteboard harlequins which form the delight of children. Weston had not the slightest power to exercise his own will in regard to that arm, or to retain it in the horizontal position a single instant. Even when helped by the right hand, the paralytic extremity could never be raised quite to the level of the head, as if there existed a stiff or anchylosed joint at the shoulder. Coming now to the hips, the thighs, and the legs, I found the same prevailing weakness of muscles and inability to exert them at will —the lame limb only following the other in a dragging way. With all this, there was great derangement of the whole system, an affection of the head approaching to fulness, and considerable difficulty in overcoming the torpor of the digestive organs. In the course of a month or two, however, the more general symptoms of morbid action were set to rights; a degree of ease was enjoyed; and at the end of ten weeks he was in much better health. Still the arm partook not of the general improvement. At length I directed that frictions should be made with a flannel dipped in a strong ammoniated counter-irritant, and that the same should be done to the back, and to the lower extremities. The consequence of all these operations was, that the patient gradually regained the active use of his leg and foot; that he lost those peculiarly odd sensations which he had experienced in the head; and finally that he was able, at the expiration of a few months (during which he went through a course of warm sea-bathing at Margate), to grasp my hand tight enough to give me pain, and to raise his left arm, unassisted, as high as, and even higher than, and over his head. He has since returned to his duties as clerk in a public office.

CASE LXXXIV.

Paralytic squinting. (Strabismus paralyticus.)

This was a curious as well as an interesting case. It occurred in the person of a young lady of much personal attraction, Miss N——n, aged twenty-one years, who about a year before began to find her vision gradually impaired, without any manifest cause. It became at last so deficient that she was compelled to consult Mr. Alexander; and that very expert oculist gave it as his opinion that the young lady was threatened with gutta serena. Every means were accordingly employed to check the progress of such an appalling and distressing malady. In the midst of these, Miss N——n awoke one morning (20th of February, 1832), seeing double, and to all appearance squinting, in the estimation of those who looked at her. Both the transparent corneas and pupils were drawn at the same time towards the inner angles of the orbits, or thrust simultaneously to the two opposite corners. In the execution of both these movements, the young lady experienced a sort of difficulty, as if the antagonist muscles were powerless as well as unharmonious; and there was a general debility also in the eyelids. The previous history of Miss N——'s complaint, the opinion given by her oculist, and the general habit of fulness observable in her, induced me to think that the case was one of paralytic debility, dependent on pressure from a congested state of the blood-vessels. I therefore ordered a free cupping at the back of the neck; immediately after which an ammoniated counter-irritant was applied behind both ears, and on both temples, and the strabismus ceased from that moment. A repetition of ordinary blistering threads placed behind the ears for the space of three months, ultimately restored most completely the natural power of the vision.

I have selected, almost at random, from a list of several similar cases, the three preceding histories of paralytic debility relieved by ammoniated counter-irritants,—in order to show what immediate aid may be derived from their use. I might without difficulty multiply these examples, did I not prefer to make room for evidence from another quarter in support of my assertion, since the disinterested feelings of two of my professional brethren enable me so to do. I shall therefore introduce in this place the statement of a much-esteemed practitioner at Southampton, giving an account of the results obtained by his father, a very experienced surgeon, from the use of the same counter-irritants, and in the same complaints, in order that I may corroborate my own practice by his, on this point. The statement is contained in a letter dated so recently as the 20th of May, of this year; and although it refers to the advantage of employing the same ammoniated agents in those diseases to which I have already fully referred, my readers will pardon me for introducing the largest portion of it in this place, as it will serve

to substantiate many of the positions laid down in the second part of this volume.

"* * * * * My father desires me to inform you that he has been an earnest advocate for counter-irritation, as long as he has been in practice, but that he had always felt distressed at the painful means resorted to for the production of that effect. Since, however, the ammoniated counter-irritant, you recommended has been introduced to his notice, he has been enabled to resort to that mode of treatment with considerable less hesitation, from the prompt, efficient, and "*elegant*" manner in which that medicine acts. He has been so much and so generally accustomed to make use of it, that he has not reserved any notes of his experience; but we have both been in the habit of applying it, either remotely or proximately, with much success in most neuralgic affections, in cases of chronic rheumatism, *in paralysis occurring in debilitated constitutions*, in all pains of the abdomen or thorax when unaccompanied by inflammation, and, indeed, in some cases of inflammation also, such as affections of the chest in children, &c. &c. Our experience of the results on all such occasions enables us to state that its use is often highly beneficial. My father was called to a gentleman, aged fifty-six years, who had lived freely, and who was unable to use the lower extremities. The ammoniated lotion was applied over the sacrum, and in succession down the course of the nerves. A little of the same medicine, in a diluted form, was also taken internally. Some movement was soon perceived, and by perseverance in this plan the power of locomotion returned entirely. Vesication was in no instance produced. My father has also found it an efficient auxiliary, in loss of power in the upper extremities, when consequent on chylopoetic derangement. He also thinks that it has afforded relief in cases of *spasmodic asthma*, when applied on the spine. A short time previous to his illness my father had three cases in which the ammoniated lotion was applied successfully during the different periods of pregnancy. The first was at an early period of gestation, in which the occurrence of continued sickness was considerably relieved, and in some instances the paroxysm checked, by the application of the lotion, sometimes to the epigastrium, at other times to the lower dorsal vertebræ. The second case was in the more advanced stage, where the sickness was also diminished, and much comfort derived in various pains over the abdomen and down the sides. These were mitigated by your ammoniated lotion, although they had resisted more active remedies on former occasions. In the third case there was not sickness, but spasms and anomalous pains about the sternum, epigastrium, and hypochondria, which were always removed by the application of the same remedy. In none of these cases the counter-irritant was allowed to vesicate; and I have to add that we use it with lint and oil silk.

"You are most completely at liberty to make any use of this that

you may be able; and we may indeed hope to see, through your exertions, the use of counter-irritation become more general. With my father's best compliments I have the honour," &c. &c.

(Signed) "E. H. Maul."

I take this opportunity of publicly thanking the highly-educated and liberal-minded writer of the preceding letter, and his respected father, with whom I have had professional intercourse during a space of twenty years, for having thus come forward in behalf of medical science and humanity, to tender their testimony of the value of counter-irritation, as recommended by myself; a testimony which in the fullest manner corroborates all that I have advanced on that subject in the body of the present work.

SECTION V.

CASES OF ACCIDENTS; MECHANICAL, CUTANEOUS, AND OTHER MORBID DERANGEMENTS.

1.—Violent Sprains, Blows, and Falls.

Nothing is more troublesome than what is termed "a sprain," although the accident be in general looked up as insignificant. How many people have been confined to their couch for days and weeks together, from a mere sprain of the foot or ankle! How many more have been obliged to tie up their arm, or bind up their wrists, from a sprain of the shoulder, or a sprain of the hand! Leeches, evaporating lotions, fomentations, bandaging, patience, and time—time long and precious—these are the usual means which surgery employs to overcome the ill effects of a sprain. Now I will not scruple to assert that if an ammoniated counter-irritant, of a strength suitable to the exigency of the case, and to the individual susceptibility of the skin of the patient, be had recourse to *immediately after* a sprain has taken place, no matter how violent, the recovery in almost every instance will be immediate; and neither leeches, bleeding, nor confinement will be required. Nay—I can state further, that in a large number of instances, in which a sprain had existed for some days, and seemed to advance but little towards recovery under the ordinary modes of treatment, even the tardy application of an ammoniated counter-irritant has materially hastened that desirable event.

What is here affirmed respecting sprains applies with equal truth to the ill effects resulting from blows or falls, where there is only contusion, without either wounds or fractures. A violent blow, which when left to itself produces, in half an hour, a considerable puffing or swelling of the part, and discolouration of the skin, will be followed by no such results, if an ammoniated counter-irritant be immediately

applied to the part. Of course in the management of all such cases, even more than in that of the more important cases already detailed in the present volume, it is necessary that the practitioner should judiciously apportion the strength of spirituous and camphorated liquids, with the highly concentrated solution of ammonia he means to employ as counter-irritants; in as much as the skin is then either in a very irritable condition, or the reverse,—according to the degree of injury sustained.

CASE LXXXV.

Sprained ankle with swelling and incipient inflammation.

A young lady, rather inclined to excessive embonpoint, of heavy weight, and naturally very shortsighted, had, in consequence of the latter defect, sustained on many occasions bruises and sprains from falls and otherwise, which, without injuring the skin, had proved very troublesome, and often painful. Leeches and embrocations had been the usual means resorted to, to obviate the ill effects of all such accidents. On one particular occasion, (23d July, 1832,) I happened to be in the house in which she was staying for a few days as a visiter, when she was brought in from the garden, having, while in the act of running fast along a gravel walk, twisted her right ankle under her, and fallen on her side. In the evening the right leg, from the instep upwards, was found much swollen; the skin was tense and hot; and pulsation of the vessels very distinctly marked. The part was, moreover, not only tender to the touch, but permanently painful; so much so that it was by her friends imagined she had dislocated the ankle joint. On the knee and hip of the same side there were marks of bruises also, and the places felt quite tender. Before I left the house that morning, I recommended immediate and absolute rest in the horizontal posture, with frictions of arquebusade water on the parts; not knowing whether the injury sustained would proceed to any great extent. When however it was found in the evening that matters seemed to become more serious than I had anticipated, and that all attempts to put the leg down and press the foot to the ground produced great pain, my attendance was again requested by the poor lady herself, who became fearful lest she should be confined in a friend's house for a long time, as had been the case before, under similar accidents, and thus become a troublesome guest, by turning a visit of a few days into a sojourn of some weeks. The external appearance of the leg, and particularly the redness and tightness of the skin, would have tempted me under ordinary circumstances to prescribe the application of several leeches, and some embrocation afterwards; but I knew such a course would not greatly expedite her recovery, and the object in this case was to shorten the usual period of confinement. With confidence therefore I recommended a moderately strong ammoniated lotion, all over the leg and instep, which was applied and kept on for five minutes. It took away the inward

pain in that time, though it augmented apparently the exteral soreness and redness of the skin. After the lapse of half an hour from the first application, seeing that no blister was produced (none being desirable) I repeated the lotion, considerably diluted, and recommended that the compress should be suffered to remain on the leg during the night. The lady of the house, under my instruction, applied that same night similar compresses, with the diluted lotion, to the bruises on the knee and hips. On the following morning every thing had returned to its natural state, the swelling and redness had disappeared, and the patient could put her foot to the ground and walk without inconvenience.

CASE LXXXVI.

Sprained wrist.

On the 19th of November, 1830, the late Sir Robert Russel, Bart. M. P., of Chequers, in the county of Bucks, whom I had often had occasion to attend professionally, came to my house with his right arm in a sling. His hand was much swollen; the wrist, tender and painful to the touch, was about twice its natural size; and above it, the muscles were also sore and somewhat swollen. By the recent marks around the wrist, I perceived that several leeches had been applied, over which he was then wearing a thick compress with some camphorated liniment. The cause of all this apparent mischief, he informed me, was a violent sprain of the wrist, occasioned by attempting to catch with one hand a large heavy folio volume while it was in the act of falling off the table. The condition of the parts here described had lasted three days, and the patient was getting fidgety at the little prospect he saw before him of a speedy recovery; the more so as in the then excited state of the House of Commons, when a change of ministry was expected in three or four days, he was particularly anxious to be in his place. I recommended, therefore, and applied immediately, an ammoniated embrocation, of an ordinary strength. Being impatient of additional pain, he at first refused to allow the application to remain on more than two or three minutes; but having at last consented to bear it for a short time longer, tightly bound round the wrist, the smarting gradually diminished, and he took his leave with the wrist quite easy. On the following day I saw him at his chambers in Stone Buildings, with the arm out of the sling, and declaring he was quite well.

CASE LXXXVII.

Sprained shoulder.

A lady, residing in the Royal Mint, somewhat advanced in years, sprained her shoulder in October, 1833, by falling in the dark over a piece of furniture which had been incautiously left in the middle of a room. The parts swelled much in the course of the night, and became very painful. The uneasiness extended down

to the elbow, and also in the direction of the muscles of the breast. I saw her in the morning; she could not then raise her arm to a perfectly horizontal position, and when it was forced into that state, much pain was produced. I applied at once the ammoniated counter-irritant for a few minutes; when considerable smarting and rubefaction followed, with great relief of the external pain and greater facility of movement. The application being repeated for three days successively with proportionate benefit, the part at the end of that time had recovered its natural tone and condition.

CASE LXXXVIII.

Sprained instep of long standing.

In April, 1835, the groom of a gentleman in Upper Grosvenor-street, a member of whose family I was then attending, asked my advice in consequence of his suffering excruciating pain in the right instep, from an old sprain. This, besides having been neglected, had lately been greatly exasperated by his having had occasion to start suddenly out of bed, and walk across a cold flagged pavement, with naked and hot feet; in doing which he had twisted the lame foot. He now could neither put his foot to the ground, nor into a stirrup, and was consequently lying idle and useless. He had used various means to get well, but to no purpose. I desired him to procure a small quantity of an ammoniated lotion, and the next morning showed him how to use it. After the first application, which lasted ten minutes, he told me he felt his foot better. At my desire he repeated the lotion three several times, at an interval of twenty-four hours, without raising a blister; and in less than a week from the date of the first application, this person was able to resume his usual duties.

CASE LXXXIX.

Another example of severe sprain of the instep.

The valet of Lord Nugent, in consequence of some accident of which I have omitted to make a memorandum, sustained a very severe sprain of one of his insteps, which disabled him from doing his usual duty, and compelled him to hop instead of walking, as he was perfectly incapable of putting the foot to the ground, so great was the pain he suffered in that part. Having asked my advice on the 27th of November, 1836, several days after the accident, while I was on a professional visit at the house, I examined the foot, which was hot to the touch, very much swollen, very tender, and evidently in a state of sub-acute inflammation. As he had already used every ordinary means in such cases recommended, I instructed him how to apply an ammoniated counter-irritating lotion, of which I gave him the prescription, and desired him to repeat it during three or four successive days if necessary. He did so, and at the end of the fourth day he reported himself quite well.

The preceding cases will, I think, be deemed quite sufficient, without multiplying them unnecessarily, to prove the efficacy of an instantaneous *revulsant* (rather than a counter-irritant), of the nature of those I recommended, in dispersing more effectually, and unquestionably much more rapidly, than by any other means, the ill effects of the local injuries therein detailed.

2.—Blows.

CASE XC.

Violent blow on one of the lower extremities, with supposed rupture of some muscular fibres.

"*Grosvenor-street, Monday, November* 27, 1837.

"I believe it was in the beginning of the year 1831, that I received so much benefit from the application of a counter-irritating lotion you recommended. You are acquainted with the nature of the accident, from which I had been long confined.

"Very truly yours,

———."

This note, which was addressed to me by a gentleman who had been formerly a colonel in the guards, and with whom I have been many years acquainted, refers to a very striking example of the value of the preparation mentioned by the patient, in relieving and ultimately curing, in the most perfect manner possible, even the most extensive, painful, and unpromising contusions from blows. The accident had occurred in the winter while hunting, and my attendance was first desired on the 8th of May, 1831. Not being able to look for my notes of the case in consequence of having forgotten the date of them, I had requested the colonel last year to state the time of my attendance; and his reply having enabled me afterwards to refer to my memoranda, I find that the history of the case was as follows:

Being out hunting, one morning, as before stated,—the colonel's horse refused to face a lofty gate, and, rearing, fell with his rider backward, the right leg and thigh remaining, for a minute or so, buried under the body of the horse, with the saddle and stirrup jammed between them. The colonel was disentangled from this perilous situation, and rose, but found he could not well keep that limb straight to the ground or walk upon it. Having at last succeeded in returning home, means were taken to ascertain whether any serious injury had been sustained. There was considerable pain in the middle and rather towards the upper and anterior part of the thigh; and in that place the injury seemed to have been considerable, judging from the degree of suffering and swelling which progressively manifested themselves, with an increased inability to move the limb. The patient, desirous of better advice,

came to London, and placed himself under the care of one of the most eminent and justly celebrated surgeons of the town. This gentleman gave it as his opinion that some of the bundles of muscular fibres which had sustained the weight of the horse had been ruptured, and that inflammation existed to a considerable extent. He recommended many judicious and valuable measures during a long attendance. Under this treatment it is probable that the more serious consequences which might have ensued from so extensive an injury, were prevented; but in respect to pain, and the power of moving the limb, little or no progress had been made. It was stated that time alone would complete the recovery; but the period of it could not be fixed, and at all events would be distant. The regular attendance of the surgeon being now discontinued, and the patient being visited only by the apothecary of the family, I was requested to call on my friend on the 8th of May. I found him suffering very considerably from a deep-seated pain in the middle of the thigh; the part being at the same time tender to the touch, and presenting a singularly knotted feel to the finger, with something like fluctuation. The part seemed also swelled; and the limb, which was somewhat contracted near and about the knee, could not be stretched or used without considerable suffering. The patient generally quitted his bed every morning; was assisted to an arm-chair in the drawing-room; and kept the affected limb in an easy semi-inclined posture on pillows before him.

The general health had been well taken care of, and nothing but the local injury required assistance. Of this the colonel was extremely impatient, having, as he has stated in his note, "been long confined" from that injury. I explained my views of the case to the patient and his lady, and stated that nothing short of a revulsant-blister of great power, such as ammoniated lotions alone could produce, would restore the limb to its natural condition. I added that I could promise, at all events, from the application of one of those preparations to the thigh, a very speedy cessation of the inward wearing and unmitigated pain he had so long experienced. The proposal being assented to, a compress as large as the palm of a man's hand, of several folds, saturated with an ammoniated counter-irritating lotion of great strength was applied, and tightly bound down by a bandage. In the course of a quarter of an hour it raised a blister, which was suffered to remain intact for some time; and when at last the serum was let out, the vesication had assumed a very considerable size, and the fluid contents of it were of course large in proportion. A few hours after the application, the local inward pain was gone, and never after returned, except in slight twinges. The vesicated surface was properly dressed from day to day, and purposely kept open to encourage a discharge from it; and in less than a week from that time the limb was, comparatively speaking, a sound limb, capable of performing its duties. Exercise, however, of any extent, riding, or fatigue of any kind, were for some time interdicted; and in this manner the patient

went on recovering most completely; so that at the end of seven days from the time of my being sent for I discontinued my attendance. The colonel has never suffered the slightest inconvenience since from that accident; although, upon any very marked change in the weather, he experiences a certain degree of uneasiness in the part formerly affected.

CASE XCI.

Severe blow on the nose.

Two young officers were playing at single-stick in a barrack-room, in March, 1834, when an unlucky blow, unskilfully aimed, and badly parried, fell on the bridge of the nose of one of the combatants. The part began immediately to swell, became red and painful, and the nose and part of the right cheek threatened to become much disfigured. This would have been a sad plight for parade; and the ordinary routine of leeches and embrocation, besides being too slow and uncertain, offered little hopes of escaping disfigurement. Recollecting the sudden good effects which the ammoniated antidynous lotion had produced in the case of a severe sprain that had occurred to his sister, the sufferer instantly flew to his home, and there sought the relief of that same application. It was used accordingly, some degrees diluted, on the bridge of the nose and upper part of the cheek; the eyes having previously been closed with two silk handkerchiefs, to prevent their being distressed by the pungent effluvia from the lotion. The compress was left on, I was informed, two minutes, and removed because it had produced great smarting. Finding, after a little while, that there was no reason to apprehend a blister, the compress, fresh wetted, was again applied for two minutes, and again removed. Lastly, it was re-applied a third time in the same manner, and equally without vesication; when all vestige of inward soreness and swelling gradually and finally subsided, and no external ecchymosis or black mark ever made its appearance on the spot. There can be no doubt but that the young gentleman would have been disfigured for some days, had he taken any other means of obviating the results of his accident.

3.—Falls.

CASE XCII.

Violent bruise of the knee.

A married lady, the sister of the gentleman alluded to in the last case but one, informed me on the 25th of May, 1835, that two or three days previously she had had a serious fall, in consequence of which her knee had received a violent bruise and was severely sprained. She complained that the parts had been getting worse,

until at last she neither could walk nor stand, the knee being much swollen and highly painful. The experience in her brother's case induced her to wish to try the same remedy, and on the fourth day of the accident, the lady having been nearly the whole of that time confined to one position, an application of one of the strongest preparations of ammoniated lotion was made to the part affected. The result was that Mrs. H—— was perfectly well the next day, and her limb quite sound.

CASE XCIII.

Fall from a lofty haystack.

Barnes, a robust square-set middle-aged man, a species of useful Caleb Quotum, or man of all work, residing in a nice village in Buckinghamshire, in which my family spent the summer months every year, fell, one day in July, 1830, from the top of a lofty haystack on my grounds, in the completion of which he was assisting. The fall luckily occurred in the erect posture, and was more like a slide down the side of the stack, by which he reached the ground on his feet. Both his ankles bent under him, and he fell prostrate, unable to rise. I happened to be spending a few days with my family at the time, and was soon on the spot, from whence I had the good man conveyed to his cottage. Having carefully examined both limbs, and found no fracture or real dislocation in any part, I directed my attention more particularly to the ankles, which were getting by this time rapidly swollen and painful. In a little more than half an hour those articulations were stiffened by the swelling, and Barnes could not in any way give them the slightest motion, when desired to try to do so. A bottle of the strongest ammoniated counter-irritant was now fetched from my house, and both ankles were surrounded with thick compresses three inches wide, wetted with it, and firmly bound down by silk handkerchiefs. The smarting and sensation of burning in the parts, produced by the application, were very severe, notwithstanding which I allowed the application to remain on till the compresses were dry. This occupied about three quarters of an hour; at the end of which period the swelling and pain had completely subsided, and the power of motion was restored to the limbs.

4.—Biles. Furuncles.

I am not about to recommend, in the cure of this species of troublesome eruptions, the use of any of the ammoniated counter-irritants. But, as the power of those agents in arresting inflammatory action of the cutaneous system and external swellings, is exhibited even when they have been misapplied, I deem it necessary to cite a single case of furuncular eruption, in which the progress of each bile was checked as fast as each made its appearance, by the application of a compress wetted with an ammoniated lotion. I

have said that I do not recommend such a practice, and for a very good reason, namely, that the checking of a growing bile, or the prevention of its maturation, serves only to transfer the disease from one part of the body to another; inasmuch as I have never seen that proceeding adopted in one place without its being followed by the appearance of the eruption in another; for nature will have its way, and where she is thwarted mischief ensues. This is precisely what occurred to a gentleman whose case I am about to relate, and to which allusion has already been made in the first part of this volume, at page 31, paragraph 81.

CASE XCIV.

Periodical appearances of Biles.

A gentleman formerly in the army, and now enjoying the *otium cum dignitate* in the lap of every comfort, has of late years become subject to a spring and autumn eruption of large biles, which sometimes attain considerable magnitude. They are evidently a safety-valve to him, and I believe he now, at last, thinks so himself. They generally appear on the head, behind the ears, in the nape of the neck, in the fleshy parts of the arm, and even in the fingers and other and lower parts of the body. Immediately before their outbreak, and for some days previous, my good friend becomes low-spirited, morose, and peevish, and discouraged at the smallest appearance of difficulty. In proportion as the safety-valve opens and acts freely on different points of the surface, the physical and the moral man both improve, and at last every thing would be *couleur de rose*, were it not for the pain of the local inflammation, the drawing of the suppurating plaster, and the squeezing hand of the friendly doctor trying to get the offending core out. These inconveniences, repeated during two or three seasons, proved rather too much for a gentleman who seldom experiences any, and would rather have none. Thinking to get the better of them, and with one and the same cunning trick to cheat both nature and the doctor, my friend, on the very first appearance of one of these furuncles, clapped upon it a compress with an ammoniated lotion, which he had heard me praise as a capital remedy to stop the progress of incipient inflammation. The effect was as he wished. That bile was quite spoiled by the lotion; it never went any further. But in a day or two a second showed itself, and it was treated in a similar manner, with a similar result. A third and a fourth followed, and they also were presently dismissed in the same cavalier-like manner. In fact, no eminence, however small, if red and painful, made its appearance, but the ammoniated agent was instantaneously made to exhibit its power in extinguishing it. Yet what did the self-medicating patient gain by this cutaneous phantasmagoria? Why, that by and by, instead of one,—three, four, and at last crops of half a dozen biles threw themselves out on his skin; and that instead of these being moderately large and

moderately painful, as before, they had now become larger and more exquisitely painful: and they also proved more troublesome to treat and to cure. Still the efficacy of a counter-irritating lotion upon them was manifest; and for that reason alone I have mentioned this case.

5.—Pimples. Crusta Lactea of Children.

CASE XCV.

Troublesome periodical Pimples of the Lips.

Although I condemn, as I am in duty bound to do, the use of the remedy under consideration in such a case of eruption as the preceding, in which that eruption was evidently critical and for a good purpose, I am not to be understood to disapprove of its use in all cutaneous derangements. On the contrary, there are some which it is desirable to get rid of as soon as possible; inasmuch as their presence can serve no good purpose. Such are, for example, those species of breakings out on the lips which one notices after severe fevers; but some varieties of which, either in the shape of pimples with a white head, or of vesicles containing a thin fluid which spreads until the vesication of a great part of the lips has been the result, are the spontaneous produce of heat in the stomach, or of a cold, or of something else unknown. Now such eruptions as these one wishes to get rid of quickly, and with little trouble; for they are not only disfiguring, but they are painful and inconvenient.

In a case of pimples of this sort, to which a gentleman, otherwise in good health, but very susceptible of cold, was frequently subject, the ammoniated revulsant was applied with complete success. No sooner does one of the little pimples appear on the lips, than it is touched with the stopper from the bottle of the strongest ammoniated counter-irritant, on which rests a volatile portion of that liquid. The part smarts for a little while, and at each application, which should be repeated if necessary a dozen times within a few hours, till the offending pimple is found to have quite disappeared. I can say from the experience of numerous cases of this kind, that the simple remedy here alluded to, will ever be found efficacious in arresting the complaint in question.

CASE XCVI.

Milky Tetter, or Crusta Lactea of Infants.

This is another cutaneous eruption which ought never to be meddled with incautiously; for, by a sudden arrest of it through the means of the various external applications that have been recommended for that purpose, serious diseases of the brain, or some other and worse eruptions, have been occasioned. In em-

ploying, however, a counter-irritating lotion, which instead of repressing, evidently increases its action,—and by increasing it, in the case of a head-eruption of infants, cures the disease,—no possible mischief can arise from the use of that agent; as a discharge is promoted during the cure, which is the great protection in such cases. Where, however, any improper application has been used instead, and the original disease being thus repressed something worse has followed, the employment of an ammoniated counter-irritant will be found most efficacious in restoring equilibrium and saving the patient from danger. This is what is well illustrated by the case about to be related.

John Stokes, aged six months, was brought to the hospital for sick children, during my attendance there as principal physician, having had, at the age of one month, a large swelling of one of the parotid glands, which, after innumerable poultices, had been lanced, when a little discharge was procured from it. The opening healed immediately, and then an eruption appeared on the top of the head, which spread downwards on all sides, so as almost to cover the entire head like a cap. That eruption soon assumed its genuine character of *crusta favosa* or running tetter. The child in the mean time seemed well in other respects. The complaint continued for some months, when "*a doctor*" advised its being cured by means of goulard water; and he effected his purpose so well, that all discharge was soon arrested from the surface of the head, and the whole dried up. In lieu of it, however, there soon came on, all over the face and cheeks, the latter of which were considerably swollen in consequence, a miliary or pimply eruption, with some fever and much irritation. I instantly applied a moderately strong counter-irritating lotion all over the occipital region of the head and behind the ears, without any internal medicine. The discharge from the previously dried up tetter was then immediately reproduced, and all the miliary eruption on the face, as well as the fever which had accompanied it, disappeared. By means of the blistering lotion the original running tetter of the infant was also completely cured in less than a fortnight, without any subsequent inconvenience.

6.—Cutaneous Pustular Diseases.

The success which I was not long in obtaining in some eruptive diseases of the skin already mentioned, from the use of ammoniated counter-irritants, when once I had become properly acquainted with their power, induced me to employ them also in the most inveterate cases of figured ringworm of the scalp and other parts. It is notorious that this disease has been, and is still, looked upon as an opprobrium to the medical practitioner, as well as to the unfortunate patient. The ringworm, when properly studied, presents several curious features and anomalies. Hitherto no treatment has been recommended for it, the rationale of which can be

said to rest on sound physiological principles. All remedies proposed have been empirical: and as such they have as often failed as they have succeeded. There is scarcely a vegetable, a mineral, or an animal substance, that has not been recommended as an external remedy for the disease in question; and, in fact, no sooner is a new substance introduced into the materia medica, than the physician or surgeon who is called upon to remove so noxious a disorder as the ringworm, instantly presses it into his service, as an external application. Thus the iodide of sulphur has, within the last year or two, been recommended and employed for that purpose; as has been also the creosote. But the result has not been more encouraging than when other external remedial agents have been resorted to. Among the latter, blisters having been deemed beneficial by many practitioners, it was natural that I should try to combat the disorder in question, by means of preparations which I knew to act on the skin as vesicants. Accordingly, in several cases of ringworm in children which fell under my notice, whether of the *aggregated* form, or of the *circinnated* or figured form, I betook myself to the use of an ammoniated lotion of suitable strength, and have had ample reason to be satisfied with the result. I shall select out of several, one case only of the disorder, and offer it as a specimen of the rest.

CASE XCVII.

Ringworm, contracted at school, and quickly pervading the head, neck, and shoulders.

Master Herbert, ——, under eleven years of age, the second son of a lady who is the subject of one of the cases of epilepsy detailed in this volume, was brought home from a preparatory school with symptoms of ringworm on the head. There were patches of recent as well as of old and dried up pustules among the hair, varying in shape and extent, from a cluster of three or four, to one of twenty and more such pustules; and these had made their appearance in the course of a few days after the use of a comb belonging to another child already affected with the disorder. On stripping the shoulders, back, and chest of the young gentleman, soon after he arrived in London, I found that the disorder had attacked the skin in those parts also. But here, instead of presenting the clustered scabs or punctated pustules, it offered the appearance of several rings, with undulating margins, varying in size and figure. The skin in the centre was in every way healthy, while the edges of the ring itself of the twentieth of an inch in width, were formed by minute pale yellow pustules, surrounded by an inflammatory blush. In the course of my attendance I had an opportunity of seeing the process by which these irregular geometrical figures became inscribed, as it were, on the skin; but as it is not the object of this work to give the natural history of this singularly untractable complaint, I shall simply confine myself to the description of

the treatment I employed for its removal. The whole of the head being shaved, washed with a strong solution of carbonate of soda afterwards, and freed from all desquamations or scabs, I proceeded to touch each single patch of the eruption on the scalp with a camel-hair brush dipped in the strongest of the ammoniated lotions —repeating the application two or three times in succession, until the patient complained of its burning. I followed the same process with the eruption on the back, shoulders, and chest; but here the smarting generally followed the first application. A blush, or red hue, invariably appeared after the use of the lotion; and for a very short time (when the general application was completed) the whole of the scalp and other parts affected seemed suffused with crimson. This appearance, however, soon vanished, and the child suffered no farther inconvenience from it for the day. At the expiration of a week, having noticed an immense improvement in the disease, I felt encouraged to use the lotion more frequently; for which purpose I instructed the old and careful nurse of the child to apply it. So effectually was this done by us, between the 1st of June, 1831, and the 19th of that month, that upon that day I took my leave, having had the satisfaction of reporting the child to his parents quite well of the ringworm. The disorder never afterwards returned. This cure was the more gratifying to me, as a young cousin of the child's, living not far from my house, who had contracted the same disorder in a similar manner, was undergoing at the same time, under physician and apothecary, a variety of treatments for its cure, including ink, pitch, tar, and blisters, none of which succeeded; so that the boy continued afflicted with the eruption for several months afterwards.

The attentive perusal of the present work will, I have every reason to believe, induce the reader to agree with me in deducing from the several propositions enunciated in the first part of this volume, and the hundred facts[1] detailed in the second, the following

CONCLUSIONS.

1st. That there exists a species of external treatment, by which a great many very important disorders of the human frame, hitherto considered as incurable, or difficult of cure, may be speedily and successfully cured without having recourse to internal remedies.

[1] With the three cases mentioned in Mr. Maul's letter, the total number of illustrative cases is *one hundred*, as stated in the title-page.

2d. That although, from time immemorial, several agents of known power have been and are still employed in the external treatment of diseases; nevertheless, the various ammoniated spirituous preparations described and recommended in the present volume, have never before been offered to the public, although they possess much greater energy for carrying on and expediting that treatment.

3d. That even where the diseases are of a nature to require the use of internal remedies, the same ammoniated spirituous preparations, externally used, will be found to be a most powerful auxiliary in hastening and securing the good effect of those remedies.

4th. That in several instances, by the rapid and almost instantaneous manner in which they act, the ammoniated spirituous preparations have been the means of saving life from imminent danger.

5th. That the principle on which all such external agents are supposed to act in the cure or alleviation of human maladies, has been termed COUNTER-IRRITATION; but that, in adopting such term, many of the phenomena which accompany the use of ammoniated external applications are still left unexplained.

6th and lastly. That by promoting a more general adoption of a counter-irritating or external treatment of disease, and thereby saving the constitution of patients from the pernicious effect of a polypharmacous treatment, a great service would be rendered to the public, and an important era established in the annals of practical medicine.

THE END.

APPENDIX

TO

GRANVILLE ON COUNTER-IRRITATION.

[Some well-merited strictures having been published on Dr. Granville for not having given, in the preceding pages, the precise formulæ employed by him in the cases which he narrates, the following communication was sent by him to the London Lancet, in the pages of which it appeared Oct. 27, 1838.

We give the letter in such form that it may be readily bound up as an appendix to Dr. Granville's publication.—*Ed.*]

Sir,—In my recent work on counter-irritation, I addressed the general reader more than my professional brethren, for reasons which are fully and openly stated in the preface, and which, I trust, will have their just weight when duly and impartially considered.

Having in the course of nine years experienced largely the benefit derived from a more effectual, as well as a more frequent and prompt use of counter-irritation, on the external parts of the body, in the treatment of many important diseases, it was natural that I should desire to propagate my conviction respecting that mode of treatment, among those who were likely to require it, namely, the public. But in order to enable the public generally to appreciate the value of a practice on which so little has been written in this country, and which, discarding the usual farago of medicaments, professes to accomplish much by very simple means, it was, above all other things, important that a plain and popular exposition of all the principles and facts appertaining to the question of counter-irritation, should be laid before the world. This could not have been effected by any work written in the language of the medical schools, nor by one exclusively addressed to the profession; for had the work been thus written, it must have remained a sealed volume to the most interested parties. The contrary course, therefore, was adopted. On the other hand, I had also to inform the public that there existed a new and more energetic combination of remedial agents, calculated to carry on and expedite the treatment of diseases by counter-irritation. But before I could so inform them, it became evidently necessary that a full and comprehensive review of the nature and effects of all the counter-irritating remedies hitherto known and usually employed should be given. In executing both tasks, it is manifest that, whatever value I might have been disposed to set on the manner and fulness of their performance, as likely to be of some little service, even to medical readers, there could have been nothing, in reality, in my performance that could be called intrinsically important to them, save a more intimate knowledge of the new agents to be employed, which might be reserved for a future communication through a more appropriate channel of publication. I therefore thought it right, for the present, to confine myself to a popular view of the matter, in order, as I stated in my preface, to prepare the general reader for a more frequent use of counter-irritation in many diseases in which it had never, or seldom, been employed. By so doing it appeared to me that the interest of medical science would be best promoted; and with that view, and for the purpose of facilitating the adoption of a counter-irritating or external treatment of disease, I named and described at length the class, nature, and effects of the particular counter-irritating agents I had found to be endowed with greater efficacy than any hitherto employed possessed, without entering into any further medical detail. This information I supported by a body of evidence, which I hoped would be deemed equally suited for the perusal of the professional and non-professional reader.

Thus far I fulfilled a duty which every medical man owes society; to have gone beyond it would have been a dangerous experiment, that of rendering the public independent of the medical faculty; an experiment which no honest practitioner should ever attempt, inasmuch as it will always redound to the injury of the community. Having, therefore, named the agents I had employed to produce the striking effects which were illustrated by many cases brought forward on the occasion, I abstained from specifying the several pharmaceutical manipulations which properly belong to the profession, and with which the non-professional readers could have nothing to do. I contented myself, in fact, with simply stating, that "by merely regulating the several proportions of those agents, according to the nature and intensity of the case we have to treat," all that I predicted would be obtained. In this manner I threw the responsibility of the active treatment into the hands of the medical attendant, who alone could determine, according to the exigency of the case under his care, the proportion to be employed, from what he must have read, in common with his patient, of the effect produced by the agents in question, in the several sections of my work devoted to that subject.

But although my impression was, that the medical attendant, with the data I had given him, is competent to determine the proportions for himself, I felt at the same time, that in order to carry out my intention of seeing the practice of counter-irritation in the treatment of diseases spread wide among the profession (so that their experience of the new mode I have suggested and recommended for that treatment might confirm the views I have adopted respecting it), I had another duty to perform. That duty consists in giving publicity, through a professional journal, to the proportions of the ingredients used in preparing the ammoniated or counter-irritating lotion, which I had myself, in the course of the last nine years, employed most frequently, either as a vesicant, or as a simple counter-irritant, intended to arrest pain.

To several medical gentlemen resident in the country, who preferred being made acquainted at once with the proportions I myself employed, rather than try to ascertain them by their own experiments, I communicated the formula by letter; and among the most recent of those communications I may mention one to Dr. Colley, of Cheltenham, who applied for it about three weeks since. To others of the profession, resident in London, I offered (as I now offer to any respectable medical person) to show the mixing of the ingredients in their several proportions, and even to exhibit some of the physiological effects on the skin produced by them. The chemist, too, who, from the first, has prepared the lotion for the use of my patients, was authorised by me, from the day of the publication of my work, to communicate the proportions to any of the faculty with whom he might be acquainted, and who might apply to him for that purpose. But these modes of propagating a useful invention in medicine are slow and imperfect, whereas that which a medical journal of high repute and extensive circulation offers, is the most effective and expeditious. I have, therefore, selected the Lancet for that purpose, being convinced, that, through its pages, my desire of putting my professional brethren in possession of the means to procure for themselves a remedial agent, which, I confidently expect, will afford them satisfaction, will be accomplished, even to the remotest parts of the country.

After perusing the following formula, and having judged of the strength of the compound lotion resulting from it, by the description given in my work of the powerful physiological effects it produces, your readers, sir, will agree with me that to have placed indiscriminately in the hands of the non-professional public such an agent would have been highly injudicious; nay, I would say dangerous, considering what we have been witness to within the last few years in regard to counter-irritation, employed by an unskilful non-professional individual, ignorant of the principles and practice with which he ventured to meddle; indeed, even to the medical profession, it

will not be an act of superfluous caution to tell them, that in the discrimination of the cases which may require the use of an ammoniated counter-irritating lotion; in the mode of applying it; in the estimation of its physiological effects; and, lastly, in the manner of treating the parts after its application, they had best follow implicitly the directions given at full length in sections iv. vi. vii. viii. and ix. of my volume on counter-irritation, and which it would be impossible to repeat in the columns of any journal.

I shall now proceed to describe the mode of preparing the two sorts of ammoniated lotions, each of different degree of power, usually employed by myself in the cases I have published, and conclude with one or two comments in illustration of the process.

Each kind of lotion consists of three ingredients:—

1st. *The strongest liquor of ammonia*, A;
2d. *Distilled spirit of rosemary*, B;
3d. *Spirit of camphor*, C.

PRELIMINARY STEPS.

A.

Saturate a given quantity of distilled water, contained in a glass receiver surrounded by ice, with ammoniacal gas, obtained in the usual way, from a mixture of equal parts of hydrochlorate of ammonia and recently slaked lime, both reduced to a fine powder. The water may be made to take up nearly 800 times its bulk of ammoniated gas under the circumstances described; its specific gravity will then be about 872, and 100 parts of it will contain 33 parts of real ammonia according to Sir H. Davy's tables. This solution of ammonia will, therefore, be more than three times the strength of the *liquor ammoniæ* of the Pharmacopœia of London, 100 parts of which, at a specific gravity of 960, contains only 10 parts of real ammonia. I have, therefore, called mine "liquor ammoniæ fortissimus."

B.

Take two pounds of the tips of small leaves of fresh rosemary, and eight pints of alcohol; leave the whole in infusion for twenty-four hours in a well-covered vessel, and after adding a sufficient quantity of water as will just prevent the empyreumatic smell, distil over *seven* pints. The Pharmacopœia of London directs the essential oil of rosemary to be distilled instead with rectified spirit. Such a preparation I found unsuited for my purpose.

C.

To four ounces of pure camphor add two pints of alcohol, so as to dissolve the camphor, which solution should be filtered. The present *tincture of camphor* of the Pharmacopœia of London contains one ounce more of that substance, and does not harmonise so well with my two other ingredients as the weaker preparation.

The three ingredients, thus prepared, every medical man should keep always ready at hand in well-stoppered glass bottles, so as to be able to make, extemporaneously, a counter-irritating lotion of any requisite strength, according to the nature of the case requiring that application on extraordinary occasions. But for the ordinary purposes detailed in my work it will be better to keep both a milder and a stronger ammoniated lotion ready prepared for use.

The Milder Ammoniated Lotion.

Assuming the quantity of lotion desired to be divided into *eight* parts, then the proportions of the ingredients will stand thus:—

A—four eighths; B—three eighths; C—one eighth.

The Stronger Ammoniated Lotion.

If the quantity desired be also divided into eight parts, then the proportions of the ingredients run as follow:—

A—five eighths; B—two eighths; C—one eighth.

Although the changes of proportion here may be deemed trifling, yet the strength of the lotion is such that I never employ it except in cases of apoplexy, and for the purpose of cauterisation.

Directions in Mixing the Ingredients.

A and B are gradually mixed together. The mixture becomes opalescent and somewhat turbid, and a peculiar highly-agreeable ethereal smell is given out, different from the individual odour of either ingredient, although the extreme pungency of the ammonia be still discernible. I have strong reasons to believe, that at this point of the operation some particular change takes place, which imparts to the mixture of the two ingredients some of its valuable peculiarities as a counter-irritant described in my work; but what that change is, it is not my business to enter upon in this place: suffice it to say, that in a great number of experiments made with the ingredients separately (for each of them acts as a counter-irritant on the skin) and with them combined, the effects were uniformly different; those in the former case being found unequal to the production of those complete results which I trust I have justly promised to the profession. Ammonia alone (however strong) will not give rise to the effects I have described, though it has often stopped internal pain and produced *small little blisters;* but never has it succeeded in almost immediately producing a full vesication, as I have seldom failed to produce with the two ingredients mixed together, particularly after the third ingredient has been added.

Before, however, that third ingredient is so added, it is desirable to clear the previous mixture, by the addition of a small quantity of alcohol, and to set the whole in a cool place. All the various precautions here mentioned may, upon an emergency, be dispensed with, when an immediate action is required, either to arrest pain or relieve deep-seated inflammation. But for the more delicate uses, particularly for instantaneous vesication, the preparation should be obtained in the manner I have specified.

The lotion must always be kept in bottles with a glass stopper; and their whole virtue depends on the accurate distillation and preparation of the ingredients, as well as on the careful admixture of the latter. The species of ethereal principle formed during the admixture remains present in the lotion, but it is apt to vanish if the bottle be frequently opened, and then much of the peculiar effect of the counter-irritation is impaired. It is one of the many recommendations of these powerful preparations, that their effluvia, besides being agreeable, are of precisely that nature which is most likely to revive and benefit the patients labouring under diseases that require the application of counter-irritants. The compound camphor liniment is the only known combination of ingredients nearly similar to the ammoniated lotion just described. But the profession is well aware that the liniment will not produce, and never has produced, the effects I have predicated.

Among those effects, one of the most surprising is that of giving rise, in a space of time varying only between three and ten minutes, and in almost every instance (if such a result be the desired object), to as ample and full a vesication as can be expected in as many hours from the best Spanish flies. This is a result which I am not aware has been obtained before in so short a time, except by boiling water (a remedy not quite so pleasant as the odour of ammonia); and on it, therefore, as well as upon its importance in the treatment of many serious disorders, I do take my stand, as also upon that of arresting nervous and muscular pain, almost immediately, provided it does not depend on structural disease.

Requesting you to take a note of these facts and assertions, and of their date, I remain your obedient servant,

A. B. GRANVILLE, M. D.

Grafton street, Oct. 22, 1838.

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